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     (FILE 'HOME' ENTERED AT 11:57:22 ON 08 DEC 1999)

     FILE 'REGISTRY' ENTERED AT 11:57:34 ON 08 DEC 1999
                E AMMONIA/CN
L1            1 S E3
                E OXYGEN/CN
L2            1 S E3
L3       131446 S (CO(L)O)/ELS
L4          128 S L3 (L) 2/ELC.SUB
L5       152267 S (LNTH/PG OR LA/ELS OR HF/ELS) (L) O/ELS
L6          585 S L5 (L) 2/ELC.SUB
L7          138 S L3 AND L5 AND 3/ELC.SUB

     FILE 'HCA' ENTERED AT 12:00:11 ON 08 DEC 1999
L8       201756 S L1 OR AMMONIA# OR NH3

     FILE 'LCA' ENTERED AT 12:00:13 ON 08 DEC 1999
L9          3525 S L2 OR OXYGENA? OR AIR OR O2 OR (O OR OXYGEN#)(2A)(GAS##
L10         3565 S OXIDA? OR OXIDI? OR OXIDN#
L11         3518 S CAT# OR CATALY?

     FILE 'HCA' ENTERED AT 12:07:47 ON 08 DEC 1999
L12        12890 S L4
L13        35063 S L6
L14         1315 S L7
L15        42627 S L8 AND (L9 OR L10)
L16         9884 S L15 AND L11
L17          236 S L16 AND L12
L18           35 S L17 AND L13
L19           19 S L16 AND L14
L20         5184 S L10(3A)L8
L21           19 S L18 AND L20
L22           14 S L19 AND L20
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L23 5 S L19 NOT L22
L24 18 S L21 NOT (L22 OR L23)
L25 16 S L18 NOT (L22 OR L23 OR L24)

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=> d l22 1-14 cbib abs hitstr hitind

L22 ANSWER 1 OF 14 HCA COPYRIGHT 1999 ACS
129:86637 **Ammonia oxidation catalyst.**
Ward, Andrew Mark; Wolfindale, Brett Albert; King, Frank; Crewdson, Bernard John (Imperial Chemical Industries PLC, UK). PCT Int. Appl. WO 9828073 A1 19980702, 17 pp. DESIGNATED STATES: W: AU, BG, BR, CA, CN, CZ, HU, JP, KR, MX, NO, PL, RO, RU, SK, UA, US; RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1997-GB3193 19971120. PRIORITY: GB 1996-26516 19961220.
AB A **catalyst** for **oxidn.** reactions, particularly the **oxidn.** of **ammonia** comprises oxides of (a) at least one element A selected from rare earths and yttrium, and (b) cobalt, said cobalt and element A being in such proportions that the element A to cobalt at. ratio is in the range 0.8 to 1.2, at least some of said cobalt and element A oxides being present as a mixed oxide phase with less than 25 % of the cobalt (by atoms) being present as free cobalt oxides. The **catalyst** may be supported on a secondary support in the form of an alkali-free

alumina or lanthana wash coat on a primary support in the form of a mesh, gauze, pad, or monolith formed from a high temp. iron/aluminum alloy or a mesh, gauze, pad, monolith, or foam of a ceramic material.

IT **58984-36-4**, Cobalt lanthanum oxide
(ammonia oxidn. catalyst)
RN 58984-36-4 HCA
CN Cobalt lanthanum oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
La	x	7439-91-0

IT **7664-41-7**, **Ammonia**, reactions
(ammonia oxidn. catalyst)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IC ICM B01J023-00
ICS B01J023-83; C01B021-26
CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
ST yttrium cobalt oxide **oxidn catalyst ammonia**; rare earth oxide **oxidn catalyst ammonia**
IT **Oxidation catalysts**
(ammonia oxidn. catalyst)
IT Rare earth oxides
(ammonia oxidn. catalyst)
IT 1307-96-6, Cobalt oxide(coo), uses 1312-81-8, Lanthana 1313-97-9, Neodymium oxide 1314-36-9, Yttrium oxide, uses 1344-28-1, Alumina, uses 11114-60-6 11129-18-3, Cerium oxide 12036-32-7, Praseodymium oxide **58984-36-4**, Cobalt lanthanum oxide 141617-29-0, Cerium cobalt lanthanum oxide
(ammonia oxidn. catalyst)
IT **7664-41-7**, **Ammonia**, reactions
(ammonia oxidn. catalyst)

L22 ANSWER 2 OF 14 HCA COPYRIGHT 1999 ACS
128:26320 **Catalysts** for **oxidative** decomposition of **ammonia** in coke-oven gas. Shiomitsu, Toru; Okawa, Takashioushi; Tomura, Keiji; Manabe, Yasuhiko; Takita, Yusaku (Nippon Kokan Co., Ltd., Japan; Takita, Yusaku). Jpn. Kokai Tokkyo Koho JP 09313940 A2 19971209 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-264456 19961004. PRIORITY: JP

1996-67758 19960325.

AB To prevent corrosion in process pipings, **NH3** is removed from coke-oven gas by contacting the **oxidative** decompn. **catalysts** contg. Co, Ce and optionally Mn on alumina, titania, magnesia or activated carbon supports at 250-400.degree. in a tubular reactor to convert **NH3** into N2 and H2O.

IT **199388-38-0**, Cerium cobalt oxide (Ce0.5Co1.49O2.99)
(**catalysts** for **oxidative** decompn. of **ammonia** in coke-oven gas)

RN 199388-38-0 HCA

CN Cerium cobalt oxide (Ce0.5Co1.49O2.99) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2.99	17778-80-2
Co	1.49	7440-48-4
Ce	0.5	7440-45-1

IT **7664-41-7**, **Ammonia**, processes
(**catalysts** for **oxidative** decompn. of **ammonia** in coke-oven gas)

RN 7664-41-7 HCA

CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IC ICM B01J023-76
ICS B01J023-889

CC 59-4 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 51

ST **catalyst oxidative** decompn **ammonia** flue gas; coke oven gas **ammonia catalyst**

IT Boiler flue gases
(**catalysts** for **oxidative** decompn. of **ammonia** in boiler flue gases)

IT Coke oven gas
(**catalysts** for **oxidative** decompn. of **ammonia** in coke-oven gas)

IT Decomposition **catalysts**
(cobalt-cerium oxides, for of **ammonia** removal from coke-oven gases)

IT 7439-96-5, Manganese, uses 7440-45-1, Cerium, uses 7440-48-4, Cobalt, uses **199388-38-0**, Cerium cobalt oxide (Ce0.5Co1.49O2.99)
(**catalysts** for **oxidative** decompn. of **ammonia** in coke-oven gas)

IT **7664-41-7**, **Ammonia**, processes
(**catalysts** for **oxidative** decompn. of **ammonia** in coke-oven gas)

IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses
(supports; **catalysts** for **oxidative** decompn. of **ammonia** in coke-oven gas)

L22 ANSWER 3 OF 14 HCA COPYRIGHT 1999 ACS
124:38657 **Catalytic oxidation** of **ammonia** to nitric oxide over La2MO4 (M = Co, Ni, Cu) oxides. Ramesh, S.; Sundar Manoharan, S.; Hegde, M. S.; Patil, K. C. (Solid State Structural Chemistry Unit, Department Inorganic Physical Chemistry, Indian Institute Science, Bangalore, 560 012, India). J. Catal., 157(2), 749-51 (English) 1995. CODEN: JCTLA5. ISSN: 0021-9517.

AB We have studied the **catalytic oxidn.** of **ammonia** to nitric oxide over La2MO4 (M = Co, Ni, and Cu) oxides synthesized by a previously described combustion method. **Catalytic oxidn.** of **ammonia** over oxides is important in two ways: (i) **ammonia** serves as a better probe mol. than carbon monoxide in **oxidn.**, as it gives distinct product selectivity based on the type of the surface oxide species; and (ii) **ammonia** leaves no surface-contaminating product.

IT **39449-41-7**, Cobalt lanthanum oxide(cola2o4)
(**catalytic oxidn.** of **ammonia** to nitric oxide over La2MO4 (M = Co, Ni, Cu) oxides)
RN 39449-41-7 HCA
CN Cobalt lanthanum oxide (CoLa2O4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
Co	1	7440-48-4
La	2	7439-91-0

IT **7664-41-7**, **Ammonia**, reactions
(**catalytic oxidn.** of **ammonia** to nitric oxide over La2MO4 (M = Co, Ni, Cu) oxides)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
ST cobalt lanthanum oxide **catalyst ammonia oxidn**; nickel lanthanum oxide **catalyst ammonia oxidn**; copper lanthanum oxide **catalyst ammonia oxidn**
IT **Oxidation catalysts**
(**catalytic oxidn.** of **ammonia** to nitric oxide over La2MO4 (M = Co, Ni, Cu) oxides)

IT 12031-41-3, Lanthanum nickel oxide(nila2o4) 12053-92-8, Copper lanthanum oxide(cula2o4) **39449-41-7**, Cobalt lanthanum oxide(cola2o4)
(**catalytic oxidn.** of **ammonia** to nitric oxide over La2MO4 (M = Co, Ni, Cu) oxides)

IT **7664-41-7**, **Ammonia**, reactions
(**catalytic oxidn.** of **ammonia** to nitric oxide over La2MO4 (M = Co, Ni, Cu) oxides)

L22 ANSWER 4 OF 14 HCA COPYRIGHT 1999 ACS

122:65410 **Catalytic** properties of perovskite-type oxides LaMnyCo1-yO3. II. Interaction between transition metal ions and their **catalytic** property in **ammonia oxidation.** Liu, She-Tian; Yu, Zuo-Long; Wu, Yue (Changchun Inst. Applied Chem., Chinese Acad. Sci., Changchun, 130022, Peop. Rep. China). Huaxue Xuebao, 52(11), 1076-81 (Chinese) 1994. CODEN: HHHPA4. ISSN: 0567-7351.

AB The interaction between the two transition metal Mn, Co ions on B-site and their redox property are the important factors influencing the NO-selectivity in **ammonia oxidn.** The NO-selectivity is related to the redox ability of Mn3+ .fwdarw. Mn4+ or Co2+ .fwdarw. Co3+, which could be promoted by doping a small amt. of foreign transition metal ions on B-site of matrix samples, but not for the sample with the compn. of y = 0.5. In Mn-rich region (y > 0.5), the magnetic property and NO-selectivity are controlled by the ferromagnetic superexchange of Mn3+-**O2**-Mn4+. The main factor influencing the NO-selectivity of Co-rich samples (y < 0.5) is the concn. of Co2+ and CoIII ions. The strong ferromagnetism of the sample with the compn. of y = 0.5 may be due to its crystal structure, and the redox between Mn3+ and Co3+ is unfavorable for the producing of NO. There exists a close relationship between the NO-selectivity and the valence, d-electron configuration, electron transmission rate and the interaction between the electrons.

IT **12016-86-3**, Cobalt lanthanum oxide(colao3)
(**catalytic** properties of perovskite-type oxides LaMnyCo1-yO3 and interaction between transition metal ions and their **catalytic** property in **ammonia oxidn.**)

RN 12016-86-3 HCA

CN Cobalt lanthanum oxide (CoLaO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

IT **7664-41-7**, **Ammonia**, reactions
(**catalytic** properties of perovskite-type oxides LaMnyCo1-yO3 and interaction between transition metal ions and

their **catalytic** property in **ammonia** **oxidn.**)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
ST perovskite **catalyst** **ammonia** **oxidn;** cobalt lanthanum manganese oxide **oxidn** **catalyst**
IT **Oxidation** **catalysts**
(**catalytic** properties of perovskite-type oxides LaMnyCo1-yO3 and interaction between transition metal ions and their **catalytic** property in **ammonia** **oxidn.**; of **ammonia** on perovskite-type oxides LaMnyCo1-yO3)
IT **Oxidation**
(of **ammonia** on perovskite-type oxides LaMnyCo1-yO3)
IT **12016-86-3**, Cobalt lanthanum oxide(colao3) 12031-12-8, Lanthanum manganese oxide(lamno3) 12200-50-9, Cobalt lanthanum manganese oxide(co0.5lamn0.5o3) 150404-71-0, Cobalt lanthanum manganese oxide(co0.9lamn0.1o3) 150404-72-1, Cobalt lanthanum manganese oxide(co0.7lamn0.3o3) 150404-73-2, Cobalt lanthanum manganese oxide(co0.3lamn0.7o3) 150404-74-3, Cobalt lanthanum manganese oxide(co0.1lamn0.9o3)
(**catalytic** properties of perovskite-type oxides LaMnyCo1-yO3 and interaction between transition metal ions and their **catalytic** property in **ammonia** **oxidn.**)
IT **7664-41-7**, **Ammonia**, reactions
(**catalytic** properties of perovskite-type oxides LaMnyCo1-yO3 and interaction between transition metal ions and their **catalytic** property in **ammonia** **oxidn.**)

L22 ANSWER 5 OF 14 HCA COPYRIGHT 1999 ACS
120:138649 The **catalytic** **oxidation** of **ammonia** in a ceramic electrochemical reactor, using metal oxide electrodes. Sammes, N. M.; Steele, B. C. H. (Sch. Sci. Technol., Univ. Waikato, Hamilton, N. Z.). J. Catal., 145(1), 187-93 (English) 1994. CODEN: JCTLA5. ISSN: 0021-9517.
AB The **oxidn.** of **ammonia** to nitric oxide can be realized in a ceramic electrochem. reactor. Electrochem. control of the **catalytically** active electrode allows for an increased selectivity to the products of interest. This work examines the effect of metal oxide electrodes as **catalysts** for the above reaction. When Co3O4 was used, for example, control of the material could be realized and a more active **catalytic** species could be produced. Co3+ was postulated to be a very active

species for the reaction and as such its stabilization by an applied potential allowed for an increased selectivity to nitric oxide.

IT **12016-86-3**, Cobalt lanthanum trioxide
(anodes, **catalytic**, **oxidn.** of **ammonia** in ceramic electrochem. reactor in relation to)

RN 12016-86-3 HCA

CN Cobalt lanthanum oxide (CoLaO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

IT **7664-41-7**, **Ammonia**, reactions
(**catalytic oxidn.** of, in ceramic electrochem. reactor, using metal oxide electrodes)

RN 7664-41-7 HCA

CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 49-10 (Industrial Inorganic Chemicals)
Section cross-reference(s): 67, 72

ST ceramic electrochem reactor **ammonia catalytic oxidn**; cobalt oxide **catalyst ammonia oxidn** electrochem

IT **Oxidation catalysts**
(electrochem., for **ammonia** to nitric oxide, in ceramic reactor)

IT 10102-43-9P, Nitric oxide, preparation
(**ammonia oxidn.** to, in ceramic electrochem. reactor, using metal oxide electrodes)

IT 1308-06-1, Cobalt oxide (Co3O4)
(anodes, **catalytic**, in **oxidn.** of **ammonia** in ceramic electrochem. reactor)

IT **12016-86-3**, Cobalt lanthanum trioxide 12190-79-3, Cobalt lithium oxide (CoLiO2) 108916-09-2, Cobalt lanthanum strontium oxide (CoLa0.8Sr0.2O3)
(anodes, **catalytic**, **oxidn.** of **ammonia** in ceramic electrochem. reactor in relation to)

IT **7664-41-7**, **Ammonia**, reactions
(**catalytic oxidn.** of, in ceramic electrochem. reactor, using metal oxide electrodes)

L22 ANSWER 6 OF 14 HCA COPYRIGHT 1999 ACS

119:189382 Study of **catalytic** properties of perovskite-tyep lanthanum manganese cobalt oxides (LaMnyCo1-yO3). I. Relation between the type of oxygen species and the **catalytic**

property in **ammonia oxidation**. Liu, Shetian; Yu, Zuolong; Yu, Yali; Zhang, Ruifeng; Wu, Yue (Changchun Inst. Appl. Chem., Acad. Sin., Changchun, 130022, Peop. Rep. China). Huaxue Xuebao, 51(6), 543-9 (Chinese) 1993. CODEN: HHHPA4. ISSN: 0567-7351.

AB The type of O species in perovskite-type oxides LaMnyCo1-yO3(y = 0.0, 0.1, 0.3, 0.5, 0.7, 0.9, 1.0) was studied by XRD, XPS and TPD. The **catalytic** activity in **NH3 oxidn.** was also studied. There were 3 desorption peaks in TPD curve corresponding to 3 types of O species (.alpha., .beta., .beta.'). The desorption temps. were 293 K .ltoreq. T.alpha. .ltoreq. 773 K, 773 K .ltoreq. T.beta. .ltoreq. 1073 K and T.beta.' .gtoreq. 1073 K, resp. The relation among the compn., structure and the **catalytic** property of the catlyst was correlated and could be explained with a model based on solid defect reaction and the interaction between Co and Mn ions. The adsorption strength and quantity of .alpha. O are proportional to the **catalytic** activity. The synergetic effect between B-site ions seems to the benefit of the **NH3 oxidn.** reaction.

IT **12016-86-3**, Cobalt lanthanum oxide (CoLaO3)
(**catalyst**, for **ammonia oxidn.**)

RN 12016-86-3 HCA

CN Cobalt lanthanum oxide (CoLaO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

IT **7664-41-7**, **Ammonia**, reactions
(**oxidn.** of, lanthanum manganese cobalt oxide perovskite-type **catalyst** for)

RN 7664-41-7 HCA

CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

ST lanthanum manganese cobalt oxide perovskite **catalyst**; **ammonia** oxion perovskite **catalyst**

IT **Oxidation catalysts**
(lanthanum manganese cobalt oxide perovskite-type, for **ammonia** conversion)

IT **12016-86-3**, Cobalt lanthanum oxide (CoLaO3) 12031-12-8, Lanthanum manganese oxide (LaMnO3) 12200-50-9, Cobalt lanthanum manganese oxide (CoLa2MnO6) 150404-71-0, Cobalt lanthanum manganese oxide (Co0.9LaMn0.1O3) 150404-72-1, Cobalt lanthanum

manganese oxide (Co0.7LaMn0.3O3) 150404-73-2, Cobalt lanthanum manganese oxide (Co0.3LaMn0.7O3) 150404-74-3, Cobalt lanthanum manganese oxide (Co0.1LaMn0.9O3)
(**catalyst**, for **ammonia oxidn.**)

IT **7664-41-7**, **Ammonia**, reactions
(**oxidn.** of, lanthanum manganese cobalt oxide perovskite-type **catalyst** for)

L22 ANSWER 7 OF 14 HCA COPYRIGHT 1999 ACS

115:143612 Study on properties of oxygen of lanthanum-cerium-cobalt oxide **catalysts** for **ammonia oxidation.**
Fan, Shurong; Wang, Qiubo; Dou, Bosheng; Yu, Zuolong (Changchun Inst. Appl. Chem., Acad. Sin., Changchun, 130022, Peop. Rep. China). Cuihua Xuebao, 12(3), 199-205 (Chinese) 1991. CODEN: THHPD3. ISSN: 0253-9837.

AB The properties of O and a structure of La-Ce-Co oxide **catalysts** were studied by means of x-ray diffraction and temp.-programmed desorption. The **catalytic** activity for **NH3 oxidn.**, the valence states of Co, and the difference of O desorption before and after **NH3 oxidn.** were also examd. The **NH3 oxidn.** over La-Ce-Co oxide **catalysts** may obey the redox mechanism, with the active site being Co3+. The substitution of Ce4+ for La3+ can produce cation vacancies and stabilize the higher **oxidn.** state of Co3+ as well as accelerate the transfer rate of O and electron in bulk, therefore the ability of lattice O regeneration is enhanced and the **catalytic** activity is increased.

IT **136073-35-3**, Cerium cobalt oxide (CeCoO3.27)
136073-41-1, Cobalt lanthanum oxide (CoLaO2.88)
(**catalysts**, for **oxidn.** of **ammonia**, structure and activity of)

RN 136073-35-3 HCA
CN Cerium cobalt oxide (CeCoO3.27) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3.27	17778-80-2
Co	1	7440-48-4
Ce	1	7440-45-1

RN 136073-41-1 HCA
CN Cobalt lanthanum oxide (CoLaO2.88) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2.88	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

IT **7664-41-7**, **Ammonia**, properties
(thermal desorption of, from cerium cobalt lanthanum oxide **catalysts**, effect of compn. on)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
ST lanthanum cerium cobalt oxide **catalyst** structure; **ammonia oxidn** lanthanum cerium cobalt oxide
IT **Oxidation catalysts**
(cerium cobalt lanthanum oxides, for **ammonia**, effect of compn. on structure and activity of)
IT **Oxidation**
(of **ammonia**, on cerium cobalt lanthanum oxides **catalysts**)
IT Kinetics of **oxidation**
(of **ammonia**, on cerium cobalt lanthanum oxides **catalysts**, effect of compn. on)
IT Valence
(of cobalt, in cerium cobalt lanthanum oxides **catalysts**, effect of compn. on and activity in relation to)
IT Desorption
(thermal, of oxygen, from cerium cobalt lanthanum oxide **catalysts**, effect of compn. on)
IT **136073-35-3**, Cerium cobalt oxide (CeCoO3.27) 136073-36-4, Cerium cobalt lanthanum oxide (Ce0.79Co0.82La0.21O3.22)
136073-37-5, Cerium cobalt lanthanum oxide (Ce0.61CoLa0.39O3.17)
136073-38-6, Cerium cobalt lanthanum oxide (Ce0.46CoLa0.54O3.13)
136073-39-7, Cerium cobalt lanthanum oxide (Ce0.3CoLa0.7O3.07)
136073-40-0, Cerium cobalt lanthanum oxide (Ce0.22CoLa0.78O3.05)
136073-41-1, Cobalt lanthanum oxide (CoLaO2.88)
136111-81-4, Cerium cobalt lanthanum oxide (Ce0.1CoLa0.9O3.01)
(**catalysts**, for **oxidn.** of **ammonia**, structure and activity of)
IT **7664-41-7**, **Ammonia**, properties
(thermal desorption of, from cerium cobalt lanthanum oxide **catalysts**, effect of compn. on)
IT 7440-48-4, Cobalt, properties
(valence of, in cerium cobalt lanthanum oxide **catalysts**, activity for **oxidn.** of **ammonia** in relation to)

L22 ANSWER 8 OF 14 HCA COPYRIGHT 1999 ACS
114:111217 X-ray photoelectron spectroscopic (XPS) study of lanthanum strontium cobalt oxide (La1-xSrxCoO3). IV. Valence band spectra of La1-xSrxCoO3. Hu, Gang; Yu, Yali; Zhang, Ruifeng (Changchun Inst. Appl. Chem., Acad. Sin., Changchun, 130022, Peop. Rep. China).

Cuihua Xuebao, 11(6), 506-9 (Chinese) 1990. CODEN: THHPD3. ISSN: 0253-9837.

AB The perovskite La1-xSixCoO3 was studied by XPS. Two situations can be distinguished as insulator and conductor. For an insulator, the occupied valence band is sepd. from the empty conduction band, while for the metal, these bands overlap and the uppermost occupied state is termed the Fermi level. Therefore, the presence of the Fermi edge in XPS confirms that La0.5Sr0.5CoO3 is metallic. XPS valence band spectrum of LaCoO3 shows that Co3d band appears above the O 2p valence band as a distinct sharp band which reflects the presence of localized state of Co 3d electrons. If Sr is partly substituted for the place of La the Co 3d band appears to overlap the O 2p band, showing the presence of delocalized state of Co 3d electrons. A min. value of O 2p binding energy appears at x = 0.5 at which the **catalytic** activity is max. for the reaction of **oxidn**. of **ammonia**. The min. value of VBM position appears also at x = 0.5.

IT **12016-86-3**, Cobalt lanthanum oxide (CoLaO3) (XPS of)

RN 12016-86-3 HCA

CN Cobalt lanthanum oxide (CoLaO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

CC 73-6 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT **12016-86-3**, Cobalt lanthanum oxide (CoLaO3) 12310-74-6, Cobalt lanthanum strontium oxide (CoLa0.5Sr0.5O3) 108916-09-2, Cobalt lanthanum strontium oxide (CoLa0.8Sr0.2O3) 109118-13-0, Cobalt lanthanum strontium oxide (CoLa0.2Sr0.8O3) 109118-14-1, Cobalt lanthanum strontium oxide (CoLa0.4Sr.dbldag.0.6O3) 110620-52-5, Cobalt lanthanum strontium oxide (CoLa0.6Sr0.4O3) (XPS of)

L22 ANSWER 9 OF 14 HCA COPYRIGHT 1999 ACS

114:105129 Study of porous plate **catalysts** containing mixed oxides of heavier rare earths [and cobalt] for **ammonia oxidation** in nitric acid manufacture. II. Comparison of the reactivity of mixed oxide **catalysts** containing lighter and heavier rare earths. Li, Xiaobao; Qiu, Fali; Lu, Shaojie (Chengdu Inst. Org. Chem., Acad. Sin., Chengdu, 610015, Peop. Rep. China). Cuihua Xuebao, 11(6), 498-501 (Chinese) 1990. CODEN: THHPD3. ISSN: 0253-9837.

AB Mixed oxide **catalysts** contg. Co and light or heavy rare earths (RE) (RECoO3, YCoO3, and LaCoO3) supported on .alpha.-Al2O3 were prepd., and their **catalytic** activity for **NH3 oxidn**. was detd. These **catalysts** showed high

activity, and RECoO3/.alpha.-Al2O3 was the best one. The effect of different rare earth oxides on **catalytic** performance was studied by temp.-programmed redn., temp.-programmed desorption, and XPS. The results showed that the **catalyst** contg. mixed heavier rare earths had lower surface O binding energy, lower electronic binding energy of Co2p3/2, and higher surface concn. of the Co3+ ion: they were all of benefit to the **catalytic oxidn.** of **NH3** at high temp.

IT **12016-86-3**, Cobalt lanthanum oxide (CoLaO3)
(**ammonia oxidn. catalyst**, performance of)
RN 12016-86-3 HCA
CN Cobalt lanthanum oxide (CoLaO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

IT **7664-41-7**, **Ammonia**, reactions
(**oxidn.** of, cobalt rare earth oxide porous plate **catalysts** for)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 49-3 (Industrial Inorganic Chemicals)
Section cross-reference(s): 67
ST rare earth cobalt oxide **catalyst; ammonia oxidn catalyst**
IT Rare earth oxides
(**ammonia oxidn. catalysts** contg. cobalt oxide and, performance of)
IT **Oxidation catalysts**
(cobalt rare earth oxide, porous plate-type, for nitric acid manuf.)
IT **12016-86-3**, Cobalt lanthanum oxide (CoLaO3) 12200-59-8, Cobalt yttrium oxide (CoYO3)
(**ammonia oxidn. catalyst**, performance of)
IT 1308-04-9D, Cobalt oxide (Co2O3), compds. with rare earth metals
(**ammonia oxidn. catalysts**, performance of)
IT **7664-41-7**, **Ammonia**, reactions
(**oxidn.** of, cobalt rare earth oxide porous plate **catalysts** for)

L22 ANSWER 10 OF 14 HCA COPYRIGHT 1999 ACS
112:43458 A comparative study on perovskite-type mixed oxide **catalysts** Ax'A1-xBO3-.lambda. (A' = calcium, strontium, A = lanthanum, B = manganese, iron, cobalt) for **ammonia oxidation**. Wu, Yue; Yu, Tao; Dou, Bosheng; Wang, Chengxian; Xie, Xiaofan; Yu, Zuolong; Fan, Shurong; Fan, Zhirong; Wang, Lianchi (Changchun Inst. Appl. Chem., Acad. Sin., Changchun, 130022, Peop. Rep. China). J. Catal., 120(1), 88-107 (English) 1989. CODEN: JCTLA5. ISSN: 0021-9517.

AB Three series of samples having the stoichiometry A'xA1-xBO3-.lambda. (x = 0-1, B = Mn, Fe, Co) were prepd. and used as **catalysts** for **NH3 oxidn**. Even at x = 0 or x = 1 the compns. of the **catalysts** were nonstoichiometric. The nonstoichiometric amt. of O, .lambda., with which the crystal structure, defects in the solid, reactivity with reactant O, and **catalytic** activity could be correlated, was a function of x. A single-phase, solid soln. exists in the compn. range from x = 0-0.4. In the case of Mn, both .lambda. and the concn. of Mn4+ depend linearly on x, but in the case of Co, due to the instability of Co4+ toward redn. by **O2-**, only .lambda. increases. The case of Fe is situated between the above two. The adsorbing capacity of **catalyst** surface to O depends closely on .lambda.. The **catalytic** activity of A'xA1-xBO3-.lambda. mixed oxides in the **NH3 oxidn**. in general could be attributed to the extent of the redox reaction of B with **O2-**. The Mn and Co systems are just two extreme cases. The dependence of the activity of Fe-contg. mixed oxides on their redox potential was confirmed by TPR and 18O-isotopic exchange study.

IT **124606-91-3**, Cobalt lanthanum oxide (CoLaO2.96)
(**catalysts**, for **ammonia oxidn.**)
RN 124606-91-3 HCA
CN Cobalt lanthanum oxide (CoLaO2.96) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2.96	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

IT **7664-41-7**, **Ammonia**, reactions
(**oxidn.** of, prepn. of mixed oxide **catalyst** for)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)

ST **catalyst** mixed oxide **ammonia oxidn**;
alk transition metal oxide **catalyst oxidn**

IT **Oxidation catalysts**
(lanthanum alk. earth transition metal oxides, for **ammonia**, prepn. and activity and structure of)

IT Redox reaction
(of transition metal in lanthanum alk. earth transition metal oxides, **catalytic** activity in relation to)

IT 124606-86-6, Lanthanum manganese oxide (LaMnO3.11)
(**catalyst**, for **ammonia oxidn.**, prepn. and activity and structure of)

IT 108252-18-2, Calcium lanthanum manganese oxide (Ca0.8La0.2MnO2.97) 108252-19-3, Calcium lanthanum manganese oxide (Ca0.9La0.1MnO2.97) 109414-47-3, Iron strontium oxide (FeSrO2.83) 120806-10-2, Iron lanthanum strontium oxide (FeLa0.1Sr0.9O2.86) 120806-11-3, Iron lanthanum strontium oxide (FeLa0.5Sr0.5O2.93) 120806-12-4, Iron lanthanum strontium oxide (FeLa0.6Sr0.4O2.95) 120806-13-5, Iron lanthanum strontium oxide (FeLa0.8Sr0.2O2.98) 120806-14-6, Iron lanthanum strontium oxide (FeLa0.9Sr0.1O2.99) 120806-15-7, Iron lanthanum oxide (Fe0.96LaO2.94) 120832-45-3, Iron lanthanum strontium oxide (FeLa0.3Sr0.7O2.92) 124588-19-8, Cobalt lanthanum strontium oxide (CoLa0.68Sr0.42O2.8) 124606-87-7, Calcium lanthanum manganese oxide (Ca0.3La0.7MnO3.06) 124606-88-8, Calcium lanthanum manganese oxide (Ca0.5La0.5MnO3.03) 124606-89-9, Calcium lanthanum manganese oxide (Ca0.7La0.3MnO3.01) 124606-90-2, Calcium manganese oxide (CaMnO2.14) **124606-91-3**, Cobalt lanthanum oxide (CoLaO2.96) 124606-92-4, Cobalt lanthanum strontium oxide (CoLa0.91Sr0.09O2.99) 124606-93-5, Cobalt lanthanum strontium oxide (CoLa0.78Sr0.22O2.84) 124606-94-6, Cobalt lanthanum strontium oxide (CoLa0.54Sr0.46O2.79) 124606-95-7, Cobalt lanthanum strontium oxide (CoLa0.4Sr0.6O2.77) 124606-96-8, Cobalt lanthanum strontium oxide (CoLa0.16Sr0.84O2.64) 124606-97-9, Cobalt strontium oxide (CoSrO2.61)
(**catalysts**, for **ammonia oxidn.**)

IT **7664-41-7**, **Ammonia**, reactions
(**oxidn.** of, prepn. of mixed oxide **catalyst** for)

L22 ANSWER 11 OF 14 HCA COPYRIGHT 1999 ACS

110:234188 Selective **oxidation** of **ammonia** to nitric oxide by perovskite-type **catalysts**. Quinlan, Michael A.; Ramanathan, Ramamurthy; Wise, Henry (SRI International, USA). U.S. US 4812300 A 19890314, 12 pp. (English). CODEN: USXXAM. APPLICATION: US 1987-72724 19870713.

AB The manuf. of NO in .ltorsim.90% yield and with min. N or N2O formation comprises (a) contacting **NH3**(g) in an **O** -contg. **gas**, optionally with an inert gaseous diluent, with a mixed metal perovskite **catalyst** having general formula ABO3 (A if .gtoreq.1 alkali, alk. earth, lanthanide, or actinide metals having a relatively large ionic radius; B is .gtoreq.1 metals of Group IB, IVB, VB, VIB, VIIB, or VIII), and wherein the perovskite phase of the **catalyst** has equil.

pressure of O at 1000.degree. .ltorsim.10-15 bar, and (b) heating the reactants at .ltorsim.500.degree. at vapor space velocity 10-100,000/h. The NO is useful for the manuf. of HNO3. A mixt. consisting of **NH3** 3.3, O 6.7, and He 90 vol.%, was reacted at 940 K and vapor space velocity 6400/h over a **catalyst** having the formula La0.75Sr0.25MnO3 and initial surface area 22 m2/g. The selectivity for NO, N2O, and N was 99, 0, and 1, vs. 92, 4, and 4%, resp., at 640 K.

IT **7664-41-7**, **Ammonia**, reactions
(**oxidn.** of, perovskite-type selective **catalyst** for, for nitrogen and dinitrogen oxide formation prevention)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

IT **12016-86-3P**, Cobalt lanthanum oxide (CoLaO3)
(prepn. of, for perovskite-type **ammonia oxidn . catalyst**, for nitric oxide, for nitrogen and dinitrogen oxide formation prevention)
RN 12016-86-3 HCA
CN Cobalt lanthanum oxide (CoLaO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

IT **7782-44-7**, Oxygen, reactions
(reaction of, with **ammonia**, for nitric oxide, perovskite-type selective **catalysts** for, for nitrogen and dinitrogen oxide formation prevention)
RN 7782-44-7 HCA
CN Oxygen (8CI, 9CI) (CA INDEX NAME)

IC ICM C01B021-26
NCL 423404000
CC 49-8 (Industrial Inorganic Chemicals)
ST **ammonia oxidn catalyst** selectivity; nitric oxide **ammonia oxidn catalyst**; perovskite **oxidn catalyst** selectivity; lanthanum manganese oxide **catalyst**; cobalt lanthanum manganese oxide; nickel lanthanum manganese oxide; strontium lanthanum manganese oxide

IT Actinides
Alkaline earth metals
Group IB elements
Group IVB elements
Group VB elements
Group VIB elements
Group VIIB elements
Group VIII elements
Alkali metals, uses and miscellaneous
Rare earth metals, uses and miscellaneous
(**oxidn. catalysts** contg., perovskite-type mixed oxide, for selective **oxidn.** of **ammonia** to nitric oxide)

IT 7727-37-9P, Nitrogen, preparation 10024-97-2P, Dinitrogen oxide, preparation
(formation of, prevention of, in **ammonia oxidn**. to nitric oxide, perovskite-type **catalysts** for)

IT 10102-43-9P, Nitric oxide (NO), preparation
(manuf. of, by **ammonia oxidn.**, perovskite-type selective **catalysts** for, for nitrogen and dinitrogen oxide formation prevention)

IT 12031-12-8P, Lanthanum manganese oxide (LaMnO3) 12031-18-4P, Lanthanum nickelate (LaNiO3)
(**oxidn. catalyst**, perovskite-type, for nitric oxide manuf. from **ammonia**, selectivity of)

IT 7439-91-0, Lanthanum, uses and miscellaneous 7439-96-5, Manganese, uses and miscellaneous 7440-02-0, Nickel, uses and miscellaneous 7440-24-6, Strontium, uses and miscellaneous 7440-48-4, Cobalt, uses and miscellaneous
(**oxidn. catalysts** contg., perovskite-type mixed oxide, for selective **oxidn.** of **ammonia** to nitric oxide)

IT **7664-41-7**, **Ammonia**, reactions
(**oxidn.** of, perovskite-type selective **catalyst** for, for nitrogen and dinitrogen oxide formation prevention)

IT 75-59-2, Tetramethylammonium hydroxide
(precipitant, in high-selectivity perovskite-type **ammonia oxidn. catalyst** prepn.)

IT **12016-86-3P**, Cobalt lanthanum oxide (CoLaO3) 12191-21-8P, Copper lanthanum manganese oxide (CuLa2MnO6) 12310-74-6P 114780-80-2P, Cobalt copper lanthanum oxide (Co0.5Cu0.5LaO3)
(prepn. of, for perovskite-type **ammonia oxidn**. **catalyst**, for nitric oxide, for nitrogen and dinitrogen oxide formation prevention)

IT **7782-44-7**, Oxygen, reactions
(reaction of, with **ammonia**, for nitric oxide, perovskite-type selective **catalysts** for, for nitrogen and dinitrogen oxide formation prevention)

IT 10099-59-9
(reaction of, with tetramethylammonium hydroxide in presence of cobalt acetate, for high-selectivity **ammonia oxidn. catalyst**)

IT 71-48-7, Cobalt acetate Co(OAc)2
(reaction of, with tetramethylammonium hydroxide in presence of lanthanum nitrate, for high-selectivity **ammonia oxidn. catalyst**)
IT 543-94-2, Strontium acetate 3251-23-8, Copper nitrate (Cu(NO3)2) 10377-66-9, Manganese nitrate (Mn(NO3)2)
(reaction of, with tetramethylammonium hydroxide, in high-selectivity perovskite-type **ammonia oxidn . catalyst** prepn.)

L22 ANSWER 12 OF 14 HCA COPYRIGHT 1999 ACS
108:119802 Preparation of perovskite type combustion **catalyst** with large surface area by submicron grinding. Tanaka, Kenji; Nishida, Toshihiko; Imamura, Seiichiro (Murata Mfg. Co. Ltd., Yokaichi, 527, Japan). Chem. Express, 2(12), 759-62 (English) 1987. CODEN: CHEXEU.
AB A submicron grinding method was applied to increase the surface area of a Co/Sm perovskite-type oxide **catalyst**. The surface area was increased from 3.1 to 30.3 m2/g by the grinding. The **catalyst** exhibited an increased activity in the **oxidn.** of CH4, **NH3**, and CO.
IT **102857-18-1**, Cobalt samarium oxide
(**catalysts**, for **oxidn.**, effect of surface area increase by grinding on activity of)
RN 102857-18-1 HCA
CN Cobalt samarium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Sm	x	7440-19-9

IT **7664-41-7**, reactions
(**oxidn.** of, on cobalt samarium oxide **catalysts** , kinetics of, effect of **catalysts** surface area on)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 22
ST cobalt samarium oxide **catalyst** surface area; grinding cobalt samarium oxide surface area; **oxidn** cobalt samarium oxide **catalyst**; methane grinding cobalt samarium oxide **catalyst**; **ammonia oxidn** cobalt samarium oxide **catalyst**; carbon monoxide **oxidn** cobalt

samarium oxide
IT **Oxidation catalysts**
(cobalt samarium oxide, for methane and carbon monoxide, effect of surface area increased by grinding on activity of)
IT Kinetics of **oxidation**
(of methane and carbon monoxide, on cobalt samarium oxide **catalysts**, effect of **catalysts** surface area on)
IT Size reduction
(grinding, of cobalt samarium oxides, surface area and **catalytic** activity increased by)
IT **102857-18-1**, Cobalt samarium oxide
(**catalysts**, for **oxidn.**, effect of surface area increase by grinding on activity of)
IT 74-82-8, Methane, reactions 630-08-0, Carbon monoxide, reactions **7664-41-7**, reactions
(**oxidn.** of, on cobalt samarium oxide **catalysts**, kinetics of, effect of **catalysts** surface area on)

L22 ANSWER 13 OF 14 HCA COPYRIGHT 1999 ACS
106:126641 Perovskite **catalysts** for **ammonia oxidation.** Zabrzeski, Jerzy; Kucharczyk, Barbara; Jarmakowicz, Jozef; Terlecki, Janusz; Wyroba, Zygmunt (Inst. Technol. Nieorg. Nawozow Miner., Politech. Wroclawska, Wroclaw, Pol.). Pr. Nauk. Inst. Technol. Nieorg. Nawozow Miner. Politech. Wroclaw., 31, 103-16 (Polish) 1986. CODEN: PNPWAP. ISSN: 0084-2893.
AB A no. of **oxidn. catalysts** of the perovskite structure were synthesized and used for the **oxidn.** of **NH3** to NO. The best selectivity was obtained with the ThxLa1-xCoO3 **catalyst**, but good **catalytic** qualities were also displayed by such **catalysts** as LaCoxMn1-xO3, with x = 0.7-0.95, La0.6Sr0.4, Co0.8Mn0.2O3, Ag0.2La0.8Coo3, and Ag0.2La0.8Co0.8Mn0.2O3. The mech. strength of these **catalysts** was improved and their calcination temp. was reduced by the addn. of 5% H3BO3. Prepn. of these **catalysts** and the x-ray diffraction results are discussed.
IT **12016-86-3 106390-47-0**
(**catalysts**, for **oxidn.** of **ammonia**, selectivity of)
RN 12016-86-3 HCA
CN Cobalt lanthanum oxide (CoLaO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

RN 106390-47-0 HCA
IT **7664-41-7**, **Ammonia**, reactions
(**oxidn.** of, on lanthanum cobaltate perovskite

catalyst, selectivity of)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 67-2 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
ST perovskite **catalyst ammonia oxidn**; lanthanum cobaltate **catalyst ammonia oxidn**; thorium lanthanum cobaltate **catalyst**; strontium lanthanum cobaltate **catalyst**; silver lanthanum cobaltate **catalyst**; manganate lanthanum cobaltate **catalyst**
IT **Oxidation catalysts**
(lanthanum cobaltate perovskite, for **ammonia**, selectivity of)
IT **Oxidation**
(of **ammonia**, to nitric oxide, selectivity in **catalytic**)
IT 1314-20-1, Thorium dioxide, uses and miscellaneous
(**catalysts** from lanthanum strontium cobaltate and, for **oxidn.** of **ammonia**, selectivity of)
IT **12016-86-3** 12022-43-4, Lanthanum iron oxide (LaFeO3) 12031-12-8 37249-69-7 106390-29-8 106390-30-1 106390-43-6 106390-44-7 106390-45-8 106390-46-9 **106390-47-0** 106390-66-3 106390-67-4 106829-56-5 106829-80-5 106829-81-6 106830-01-7
(**catalysts**, for **oxidn.** of **ammonia**, selectivity of)
IT 10043-35-3, Boric acid, properties
(mech. strength and calcination temp. of lanthanum cobaltate pervoskite **catalysts** with addn. of)
IT **7664-41-7**, **Ammonia**, reactions
(**oxidn.** of, on lanthanum cobaltate perovskite **catalyst**, selectivity of)

L22 ANSWER 14 OF 14 HCA COPYRIGHT 1999 ACS
84:169045 **Oxidation catalyst.** Whelan, James M.; Brook, Richard J. (University of Southern California, USA). U.S. US 3926854 19751216, 10 pp. (English). CODEN: USXXAM. APPLICATION: US 1970-99239 19701217.
AB Ceramic mixed oxide, nonstoichiometric elec. neutral rare-earth-type **catalysts** such as LaCoO3 [**12016-86-3**], Ba0.1Y0.9TiO3, and Sr0.1La0.9CoO(3.+-.m), m = 0-0.11, were prepd. and used in the **catalytic** removal of CO, hydrocarbons, and NOx from exhaust gases. **Air** contg. 5% CO and 10% H2O was passed through a bed of CaLa9(NiO(3.+-.m))10, n = 0-0.11, to reduce CO2 content to <10 ppm. **Air** contg. 4% H2S was passed through Sr0.2Ce0.8CoO(3.+-.m), m = as above to give **air**

substantially free of H2S.

IT **12016-86-3**
(**catalysts**, for **oxidn.** of waste gases)

RN 12016-86-3 HCA

CN Cobalt lanthanum oxide (CoLaO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

IT **7664-41-7**, reactions
(**oxidn.** of, in exhaust gases, **catalysts** for)

RN 7664-41-7 HCA

CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IC B01J

NCL 252462000

CC 59-2 (Air Pollution and Industrial Hygiene)

ST **oxidn catalyst** waste gas; oxide mixed **catalyst** gas

IT **Oxidation catalysts**
(mixed oxides, for exhaust gases)

IT Exhaust gases
Flue gases
(**oxidn.** of, **catalysts** for)

IT **12016-86-3** 12777-94-5 39377-48-5 58051-91-5 59165-21-8 59165-22-9 59165-23-0 59165-24-1 59165-25-2 59165-26-3 59165-27-4 59908-26-8
(**catalysts**, for **oxidn.** of waste gases)

IT 630-08-0, reactions 7446-09-5, reactions **7664-41-7**, reactions 7783-06-4, reactions 10102-43-9, reactions 11104-93-1
(**oxidn.** of, in exhaust gases, **catalysts** for)

=> d l23 1-5 cbib abs hitstr hitind

L23 ANSWER 1 OF 5 HCA COPYRIGHT 1999 ACS

124:324126 Diesel denitrification: **Catalyzed** reduction of NOx by **NH3** on metal oxide and perovskites. Salker, A. V.; Maurer, B.; Weisweiler, W. (Department Chemistry, Goa University, Goa, India). Wiss. Abschlussber. - Int. Semin. Forsch. Lehre Chemieingenieurwes., Tech. Phys. Chem., 30th, 112-124. Universitaet Karlsruhe: Karlsruhe, Germany. (German) 1995. CODEN: 62RKAZ.

AB Redn. of NOx in and **O**-rich **atm.** requires a

suitable reductant like **NH3**. In diesel engine exhausts, **NH3** can selectively reduce NOx in presence of excess O with the help of a suitable **catalyst**. Zeolite ZSM-5 (Si/Al = 20) itself is a poor **catalyst** for NOx redn. with **NH3** in presence of O, but when supported with metals like Cu, Fe, Cr, and Ni, it behaves as active NOx redn. **catalyst** . Cu-ZSM-5 showed better activity then other metal-ZSM-5, with and without water. Perovskites such as LaFeO3, LaCoO3, and LaNiO3 are prepd. by co-pptn. method and are coated on cordierite honeycomb by sol-gel technique with ZSM-5 as supporting material. LaFeO3 showed good activity for NOx redn. and low N2O formation, indicating high selectivity. In presence of water, the NOx-conversion decreased; however, reaction selectivity is better, the Cu-ZSM-5 is exception to this case.

IT **12016-86-3**, Cobalt lanthanum oxide (CoLaO3)
(ZSM 5-supported; temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)

RN 12016-86-3 HCA

CN Cobalt lanthanum oxide (CoLaO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

IT **7664-41-7**, **Ammonia**, reactions
(temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)

RN 7664-41-7 HCA

CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 59-3 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 67

ST diesel exhaust nitrogen oxide **catalytic** redn; **ammonia catalyzed** redn exhaust nitrogen oxide; metal oxide redn **catalyst** nitrogen oxide; perovskite redn **catalyst** exhaust nitrogen oxide

IT Reduction **catalysts**
(metal oxides and perovskite; temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)

IT Perovskite-type crystals
(temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)

IT Zeolites, uses
(CrZSM 5, temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)

IT Zeolites, uses
(CuZSM 5, temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)

IT Zeolites, uses
(NiZSM 5, temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)

IT Zeolites, uses
(ZSM 5, temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)

IT Zeolites, uses
(ZSM 5, iron-substituted, temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)

IT Zeolites, uses
(ZSM 5, lanthanum-substituted, temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)

IT Exhaust gases
(diesel, temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)

IT **12016-86-3**, Cobalt lanthanum oxide (CoLaO3) 12022-43-4, Iron lanthanum oxide (FeLaO3) 12031-18-4, Lanthanum nickel oxide (LaNiO3)
(ZSM 5-supported; temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)

IT 10024-97-2, Nitrous oxide, processes
(temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and

with and without water)
IT 11104-93-1, Nitrogen oxide, processes
(temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)
IT **7664-41-7**, **Ammonia**, reactions
(temp. and **catalyst** effect on diesel exhaust gas nitrogen oxides redn. by **ammonia** over metal oxide and/or perovskite **catalysts** in presence of oxygen and with and without water)

L23 ANSWER 2 OF 5 HCA COPYRIGHT 1999 ACS
119:55133 **Oxidation catalysts** comprising perovskite-type lanthanum mixed oxides for waste gas treatment. Nakatsuji, Tadao; Okuno, Masao; Yoshimoto, Masafumi (Sakai Chemical Industry Co, Japan). Jpn. Kokai Tokkyo Koho JP 05049943 A2 19930302 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-293966 19910820.
AB The **catalysts** comprise LaxA1-xByB'1-yO3 (A = Ba, Sr, Zn, Ag, or Ce; B = Mn or Co; B' = Co, Fe, Ni, Cu, Ti, Zr, or Cr; 0 .ltoreq. x .ltoreq.1, 0 .ltoreq. y .ltoreq. 1) with sp. surface area .gtoreq.20 m2/g which are loaded on solid acid supports. The **catalysts** are useful for treatment of engine exhaust gases and waste gases contg. hydrocarbons, EtOH, CO, etc.
IT **12016-86-3**, Cobalt lanthanum oxide (CoLaO3)
(**catalyst**, perovskite-type, for waste gas treatment)
RN 12016-86-3 HCA
CN Cobalt lanthanum oxide (CoLaO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

IT **7664-41-7**, **Ammonia**, miscellaneous
(removal of, from waste gases, **oxidn. catalysts** for, perovskite-type lanthanum mixed oxides as)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IC ICM B01J035-10
ICS B01D053-36; B01J023-34; B01J023-76; B01J023-78; B01J023-80; B01J023-84; B01J023-86; B01J029-24; B01J029-34
CC 59-3 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 67

ST **oxidn catalyst** waste gas; lanthanum oxide perovskite **catalyst**; exhaust gas **oxidn catalyst**

IT Aluminosilicates, uses
(**catalyst** contg., with perovskite-type lanthanum mixed oxides, for waste gas treatment, COK-84)

IT Exhaust gases
Waste gases
(**catalysts** for treatment of, perovskite-type lanthanum mixed oxides as)

IT **Oxidation catalysts**
(perovskite-type lanthanum mixed oxides, for waste gas treatment)

IT Zeolites, miscellaneous
(H mordenite-type, **catalyst** contg., with perovskite-type lanthanum mixed oxides, for waste gas treatment, HM-23)

IT Zeolites, uses
(ZSM 5, titanium-substituted, **catalyst** contg., with perovskite-type lanthanum mixed oxides, for waste gas treatment)

IT 13463-67-7, Titania, miscellaneous
(activated, **catalyst** contg., with perovskite-type lanthanum mixed oxides, for waste gas treatment)

IT 7440-22-4, Silver, uses 7440-67-7, Zirconium, uses
(**catalyst**, perovskite-type lanthanum mixed oxides contg., for waste gas treatment)

IT **12016-86-3**, Cobalt lanthanum oxide (CoLaO3) 12031-12-8, Lanthanum manganese oxide (LaMnO3) 12508-83-7, Lanthanum manganese titanium oxide (La2MnTiO6) 125465-51-2 148267-94-1, Barium cobalt lanthanum nickel oxide (Ba0.2Co0.8La0.8Ni0.2O3) 148267-95-2, Cobalt iron lanthanum strontium oxide (Co0.8Fe0.2La0.4Sr0.6O3) 148267-96-3, Cobalt copper lanthanum zinc oxide (Co0.8Cu0.2La0.8Zn0.2O3) 148267-98-5
(**catalyst**, perovskite-type, for waste gas treatment)

IT 50-00-0, Formaldehyde, miscellaneous 64-17-5, Ethanol, miscellaneous 64-19-7, Acetic acid, miscellaneous 67-56-1, Methanol, miscellaneous 74-93-1, Methanethiol, miscellaneous 75-08-1, Ethanethiol 75-50-3, Trimethylamine, miscellaneous 78-93-3, Methyl ethyl ketone, miscellaneous 107-92-6, Butyric acid, miscellaneous 108-88-3, Toluene, miscellaneous 630-08-0, Carbon monoxide, miscellaneous **7664-41-7**, **Ammonia**, miscellaneous 7783-06-4, Hydrogen sulfide, miscellaneous
(removal of, from waste gases, **oxidn. catalysts** for, perovskite-type lanthanum mixed oxides as)

IT 1344-28-1, Alumina, miscellaneous
(.gamma.-, **catalyst** contg., with perovskite-type lanthanum mixed oxides, for waste gas treatment, A-11)

L23 ANSWER 3 OF 5 HCA COPYRIGHT 1999 ACS

112:164248 Apparatus for nitrogen oxide removal from flue gas. Murakami, Nobuaki; Takeda, Kazuhiro (Mitsubishi Heavy Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01127028 A2 19890519 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP

1987-283030 19871111.

AB App. for removal of NOx from flue gas by non-**catalytic** redn. with **NH3** and a reducing agent comprises a reaction chamber maintained at 450-900.degree. and divided into sections by partitions, means for injecting **NH3** and the reducing agent installed at the upstream direction of the chamber, and a porous partition loaded with a **catalyst** for the **oxidn.** of the reducing agent at the downstream of the chamber. LaCoO3 was used as the **catalyst** for NOx removal by **NH3** mixed with H, CO, and CH4 in examples. This app. had high NOx removal efficiency and the treated gas had low reducing agent concn.

IT **12016-86-3**, Lanthanum cobaltate (LaCoO3)
(**oxidn. catalyst**, in app. for nitrogen oxide removal from flue gas by non-**catalytic** redn. with **ammonia** and reducing agents)

RN 12016-86-3 HCA

CN Cobalt lanthanum oxide (CoLaO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

IT **7664-41-7**, **Ammonia**, uses and miscellaneous
(removal of nitrogen oxide with reducing agents and, from flue gas, app. for)

RN 7664-41-7 HCA

CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IC ICM B01D053-34
ICS B01D053-36

CC 59-4 (Air Pollution and Industrial Hygiene)

ST flue gas nitrogen oxide removal app; **ammonia** flue gas denitration app; hydrogen flue gas denitrition app; carbon monoxide flue gas denitrition app; methane flue gas denitrition app; lanthanum cobalt oxide flue gas denitration

IT Flue gases
(nitrogen oxide removal from, by non-**catalytic** redn. with **ammonia** and reducing agents, app. for)

IT **12016-86-3**, Lanthanum cobaltate (LaCoO3)
(**oxidn. catalyst**, in app. for nitrogen oxide removal from flue gas by non-**catalytic** redn. with **ammonia** and reducing agents)

IT 74-82-8, Methane, uses and miscellaneous 630-08-0, Carbon monoxide, uses and miscellaneous 1333-74-0, Hydrogen, uses and miscellaneous

(reducing agent, removal of nitrogen oxide with **ammonia** and, from flue gas app. for)

IT **7664-41-7**, **Ammonia**, uses and miscellaneous
(removal of nitrogen oxide with reducing agents and, from flue gas, app. for)

IT 10102-43-9, Nitrogen oxide (NO), uses and miscellaneous
(removal of, from flue gas, by non-**catalytic** redn., app. for)

L23 ANSWER 4 OF 5 HCA COPYRIGHT 1999 ACS

108:118199 **Catalyst** for simultaneous removal of nitrogen oxides and carbon monoxide. Suzumura, Hiroshi; Obayashi, Yoshiaki (Mitsubishi Heavy Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62250947 A2 19871031 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-92281 19860423.

AB The title **catalyst** is prepd. by loading a **catalyst** layer comprising .gtoreq.1 of oxides of V, W, La, Co, Cu, Fe, Sn, Ni, Cr, Ba and Zn over a monolithic support of TiO2 contg. .gtoreq.1 of oxides of W, Sn, Al, Zr, Co and Zn. The **catalyst** is highly active for removing NOx and CO and prevents side reactions. Thus, a waste gas contg. 200 ppm CO and 200 ppm NOx was mixed with 200 ppm **NH3**, and passed through a **catalyst** comprising a support of Al2O3/TiO2 (0.08/1) loaded with 5 wt. % CoO/V2O5 (60/40) at 2000 h-1 vol. space velocity and 350.degree.. The removal of NOx and CO were 98% and 96%, resp., compared with 72% and 82% for a conventional **catalyst**.

IT **12016-86-3**, Lanthanum cobalt oxide (LaCoO3)
(**catalyst** contg., for nitrogen oxide and carbon monoxide removal from waste gases)

RN 12016-86-3 HCA

CN Cobalt lanthanum oxide (CoLaO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

IC ICM B01J023-02
ICS B01D053-36; B01J023-06; B01J023-10; B01J023-14; B01J023-22; B01J023-24; B01J023-70; B01J023-76

CC 59-4 (Air Pollution and Industrial Hygiene)

ST denitrification carbon monoxide **oxidn catalyst**; waste gas denitrification **catalyst** vanadium; cobalt oxide **catalyst** waste gas

IT **Catalysts** and **Catalysis**
(cobalt oxide-vanadium oxide, on alumina-titania, for simultaneous removal of nitrogen oxides and carbon monoxide from waste gases)

IT Flue gases
Waste gases

(nitrogen oxides and carbon monoxide removal from, **catalysts** for)

IT 1304-28-5, Barium oxide (BaO), uses and miscellaneous 1307-96-6, Cobalt oxide (CoO), uses and miscellaneous 1308-38-9, Chromium oxide (Cr2O3), uses and miscellaneous 1309-37-1, Iron oxide (Fe2O3), uses and miscellaneous 1313-99-1, Nickel oxide (NiO), uses and miscellaneous 1314-13-2, Zinc oxide (ZnO), uses and miscellaneous 1314-35-8, Tungsten oxide (WO3), uses and miscellaneous 1314-62-1, Vanadium oxide (V2O5), uses and miscellaneous 1317-38-0, Copper oxide (CuO), uses and miscellaneous **12016-86-3**, Lanthanum cobalt oxide (LaCoO3) 18282-10-5, Tin oxide (SnO2)
(**catalyst** contg., for nitrogen oxide and carbon monoxide removal from waste gases)

IT 13463-67-7, Titanium oxide (TiO2), uses and miscellaneous
(**catalyst** support contg. alumina and, for nitrogen oxides and carbon monoxide removal from waste gases)

IT 1314-23-4, Zirconium oxide (ZrO2), uses and miscellaneous 1344-28-1, Aluminum oxide (Al2O3), uses and miscellaneous
(**catalyst** support contg. titanium oxide and, for nitrogen oxide and carbon monoxide removal from waste gas)

IT 630-08-0, Carbon monoxide, uses and miscellaneous 11104-93-1, uses and miscellaneous
(removal of, from waste gases, **catalysts** for)

L23 ANSWER 5 OF 5 HCA COPYRIGHT 1999 ACS

107:45508 Monolithic **catalysts** in exhaust gas converter.
Kawabata, Masataka; Matsumoto, Shinichi (Toyota Motor Corp., Japan). Jpn. Kokai Tokkyo Koho JP 62065746 A2 19870325 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-205777 19850918.

AB Exhaust gases are treated by a **catalytic** converter consisting of a monolithic honeycomb **catalyst** support, an activated Al2O3-coated layer on the **catalyst** support at the exhaust gas upsteam end, a perovskite-type compd. oxide-coated layer on the **catalyst** support at the exhaust gas downstream end, Pt-Rh **catalyst** on the Al2O3-coated layer, and a metal **catalyst** (except Rh) loaded on the perovskite-type compd. oxide-coated layer. The Al2O3-coated layer is placed at 5-50% of total length of the **catalyst** support. The perovskite-type compd. oxides of the coatings are RBO3 or R1-xA2BO3, where R is a Group IIA, IIB, or IIIB element, B is a Group IA, IB, IIA, IIB, IIIA, IIIB, IVA, IVB, VB, VIB, and VIIB element except R1 and A isa Group IA, IB, IIA, IIB, IIIA, IIIB, IVA, IVB, VB, VIB, and VIIB element except R and B. The **catalytic** activity of Rh is improved by placing Pt-Rh **catalyst** loaded on the perovskite-type compd. oxide-coating on the **catalyst** support at the exhaust gas upstream end. Thus, the 80% length of a cordierite monolithic honeycomb **catalyst** support was coated with Al2O3 by dipping in a mixed slurry contg. 10% Al2O3-contg. sol 70, activated Al2O3 powder 100, and water 20 wt. part and dried at 200.degree. for 1 h. An aq. Na2CO3 soln. was reacted with a mixt. of La(NO3)3.6H2O and

Co(NO3)2.6H2O to form a mixt. of La(OH)3 and Co(OH)2, which was filtered, dried and ground to prep. a slurry mixt. The 20% bare portion of the **catalyst** support was coated by dipping in the prepd. slurry and heated at 200.degree. for 1 h and at 600.degree. for 2 h to give a LaCoO3-coated layer. The Al2O3-coated portion was further coated by dipping in an aq. soln. contg. 0.5 g/L PdCl2, and dried at 200.degree. for 2 h to give a Pd **catalyst** layer contg. 0.5 Pd/L-support. The LaCOO3-coated portion was coated in a similar manner by dipping in an aq. 0.5 g/L Pt(**NH3**)2(NO2)2 soln. to load 0.5 g-Pt/L-support, and then, in an aq. RhCl3 soln. to load 0.2 g Rh/L-support and thus form the **catalytic** converter. The Pt-Rh **catalyst** side of the prepd. **catalytic** converter was placed at the downstream end of a Pb-contg. exhaust gas from a 2.8 L engine at 2,000 rpm and 13.0 **air** to fuel ratio and by adding a 0.32 wt.% Pb-contg. engine oil to the fuel at 50 mL/h for 300 h. The resulting conversion ratio of hydrocarbons, CO, and NOx was 93, 89, and 95%, as compared to that of 84, 81, and 80%, resp., by a comparative method.

IT **12016-86-3**
(**catalyst** carrier, on perovskite-type compd. oxide, on cordierite honeycomb, for exhaust converter)

RN 12016-86-3 HCA

CN Cobalt lanthanum oxide (CoLaO3) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Co	1	7440-48-4
La	1	7439-91-0

IC ICM B01J023-56
ICS B01D053-36; B01J023-89; B01J035-02; F01N003-28

CC 59-3 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 67

ST exhaust gas **catalytic** converter; alumina cordierite honeycomb **catalyst** support; rhodium platinum **catalyst** exhaust gas; perovskite oxide coating **catalyst** support; lanthanum cobalt oxide coating support; palladium coating **catalyst** exhaust gas

IT Perovskite-type crystals
(**catalyst** carrier, on cordierite honeycomb, for exhaust converter)

IT Exhaust gases
(**catalytic** converter for, alumina- and lanthanum cobalt oxide coated cordierite honeycomb in, platinum-rhodium- and palladium coated **catalysts** on)

IT **Catalysts** and **Catalysis**
(honeycomb, for exhaust converter)

IT 1344-28-1, Alumina, uses and miscellaneous
(**catalyst** carrier, on cordierite honeycomb, for exhaust

converter)
IT **12016-86-3**
(**catalyst** carrier, on perovskite-type compd. oxide, on cordierite honeycomb, for exhaust converter)
IT 1302-88-1, Cordierite
(**catalyst** support, honeycomb, for exhaust converter)
IT 7440-16-6, Rhodium, uses and miscellaneous
(**catalyst**, and platinum, on lanthanum cobalt oxide-coated cordierite honeycomb, for exhaust converter)
IT 7440-06-4, Platinum, uses and miscellaneous
(**catalyst**, and rhodium, on lanthanum cobalt oxide-coated cordierite honeycomb, for exhaust converter)
IT 7440-05-3, Palladium, uses and miscellaneous
(**catalyst**, on activated alumina-coated cordierite honeycomb, for exhaust converter)

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L24 ANSWER 1 OF 18 HCA COPYRIGHT 1999 ACS
123:295638 **Catalytic oxidation** of **ammonia** -containing wastewater with ozone. Shishida, Kenichi; Ikeda, Mitsuaki; Mitsui, Kiichiro (Nippon Catalytic Chem Ind, Japan). Jpn. Kokai Tokkyo Koho JP 07204668 A2 19950808 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-5440 19940121.
AB The process comprises removal of **NH3**-N from wastewater contg. .gtoreq.1 of F, Cl, I, and At ions at 0-100.degree. and under pressure such that the wastewater remains a liq. and then contacting the wastewater with O3-contg. gases in the presence of solid **catalysts**. The process is simple and provides high efficiency.
IT **1306-38-3P**, Cerium oxide (CeO2), uses **1307-96-6P**, Cobalt oxide (CoO), uses
(removal of **NH3**-N from wastewater by treatment with ions of F, Cl, I, and/or At and contacting with O3 and solid **catalysts**)
RN 1306-38-3 HCA
CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)

O=Ce=O

RN 1307-96-6 HCA
CN Cobalt oxide (CoO) (8CI, 9CI) (CA INDEX NAME)

Co=O

IC ICM C02F001-74
ICS C02F001-58; C02F001-72; C02F001-76; C02F001-78

CC 60-2 (Waste Treatment and Disposal)
Section cross-reference(s): 67

ST wastewater **ammonia** removal ozone **catalyst**;
bromide chloride wastewater **ammonia** removal; iodide
astatine wastewater **ammonia** removal

IT Metals, uses
Oxides, uses
(**catalysts**; removal of **NH3**-N from wastewater
by treatment with ions of F, Cl, I, and/or At and contacting with
O3 and solid **catalysts**)

IT **Oxidation catalysts**
(removal of **NH3**-N from wastewater by treatment with
ions of F, Cl, I, and/or At and contacting with O3 and solid
catalysts)

IT Bromides, uses
Chlorides, uses
Iodides, uses
(removal of **NH3**-N from wastewater by treatment with
ions of F, Cl, I, and/or At and contacting with O3 and solid
catalysts)

IT Wastewater treatment
(ozonization, removal of **NH3**-N from wastewater by
treatment with ions of F, Cl, I, and/or At and contacting with O3
and solid **catalysts**)

IT 7429-90-5, Aluminum, uses 7439-88-5, Iridium, uses 7439-89-6,
Iron, uses 7439-95-4, Magnesium, uses 7439-96-5, Manganese, uses
7440-02-0, Nickel, uses 7440-05-3, Palladium, uses 7440-06-4,
Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium,
uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses
7440-24-6, Strontium, uses 7440-31-5, Tin, uses 7440-32-6,
Titanium, uses 7440-33-7, Tungsten, uses 7440-39-3, Barium, uses
7440-44-0, Carbon, uses 7440-45-1, Cerium, uses 7440-48-4,
Cobalt, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses
7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-70-2,
Calcium, uses
(removal of **NH3**-N from wastewater by treatment with
ions of F, Cl, I, and/or At and contacting with O3 and solid
catalysts)

IT 1304-28-5P, Barium oxide, uses 1305-78-8P, Calcium oxide, uses
1306-38-3P, Cerium oxide (CeO2), uses **1307-96-6P**,
Cobalt oxide (CoO), uses 1309-37-1P, Iron oxide (Fe2O3), uses
1309-48-4P, Magnesium oxide, uses 1313-13-9P, Manganese dioxide,
uses 1313-99-1P, Nickel oxide, uses 1314-11-0P, Strontium oxide,
uses 1314-13-2P, Zinc oxide, uses 1314-23-4P, Zirconia, uses
1314-35-8P, Tungsten oxide, uses 1317-38-0P, Copper oxide (CuO),
uses 1344-28-1P, Alumina, uses 7631-86-9P, Silica, uses
13463-67-7P, Titania, uses 111346-19-1P, Titanium zirconium oxide
(Ti0.7Zr0.3O2) 169169-43-1P, Manganese titanium zirconium oxide
(Mn0.52Ti0.34Zr0.15O2) 169169-45-3P, Barium magnesium manganese
nickel oxide (Ba0.1Mg0.29Mn0.35Ni0.26O1.35) 169169-47-5P, Calcium
cobalt manganese tungsten oxide (Ca0.4Co0.2Mn0.39W0.02O1.42)
169554-78-3P, Titanium oxide silicate (Ti0.69O0.77(SiO4)0.31)

169554-80-7P, Manganese strontium zinc oxide (Mn0.15Sr0.09Zn0.76O1.23) 169554-81-8P, Aluminum manganese ruthenium oxide (Al1.84Mn0.07Ru0.01O2.9) 169554-82-9P, Aluminum manganese oxide (Al0.92Mn0.54O2.46) 169554-83-0P, Cerium iron manganese oxide (Ce0.06Fe0.74Mn0.57O2.37) 169554-84-1P, Copper manganese oxide (Cu0.04Mn0.96O1.96) 169554-85-2P, Manganese strontium zinc oxide (Mn0.15Sr0.1Zn0.75O1.15) 169554-86-3P, Manganese titanium oxide silicate (Mn0.36Ti0.39O0.97(SiO4)0.26)
(removal of **NH3**-N from wastewater by treatment with ions of F, Cl, I, and/or At and contacting with O3 and solid **catalysts**)

IT 7440-68-8, Astatine, uses 10028-15-6, Ozone, uses
(removal of **NH3**-N from wastewater by treatment with ions of F, Cl, I, and/or At and contacting with O3 and solid **catalysts**)

IT 12125-02-9, Ammonium chloride, processes 14798-03-9, Ammonium, processes
(removal of **NH3**-N from wastewater by treatment with ions of F, Cl, I, and/or At and contacting with O3 and solid **catalysts**)

L24 ANSWER 2 OF 18 HCA COPYRIGHT 1999 ACS

123:295637 **Catalytic oxidation** of **ammonia**-containing wastewater with ozone. Shishida, Kenichi; Ikeda, Mitsuaki; Mitsui, Kiichiro (Nippon Catalytic Chem Ind, Japan). Jpn. Kokai Tokkyo Koho JP 07204667 A2 19950808 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-5439 19940121.

AB The process comprises removal of **NH3**-N from wastewater contg. Br- at 0-100.degree. and under pressure such that the wastewater remains a liq., and then contacting the wastewater with O3-contg. gases in the presence of solid **catalysts**. The process is simple and provides high efficiency.

IT **1306-38-3P**, Cerium oxide (CeO2), uses **1307-96-6P**, Cobalt oxide (CoO), uses
(removal of **NH3**-N from wastewater by treatment with bromides and contacting with O3 and solid **catalysts**)

RN 1306-38-3 HCA

CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)

O═Ce═O

RN 1307-96-6 HCA

CN Cobalt oxide (CoO) (8CI, 9CI) (CA INDEX NAME)

Co═O

IC ICM C02F001-74
ICS C02F001-58; C02F001-72; C02F001-76; C02F001-78

CC 60-2 (Waste Treatment and Disposal)
Section cross-reference(s): 67
ST wastewater **ammonia** removal ozone **catalyst**;
bromide ozone wastewater **ammonia** removal
IT Metals, uses
Oxides, uses
(**catalysts**; removal of **NH3**-N from wastewater by treatment with bromides and contacting with O3 and solid **catalysts**)
IT **Oxidation catalysts**
(removal of **NH3**-N from wastewater by treatment with bromides and contacting with O3 and solid **catalysts**)
IT Bromides, uses
(removal of **NH3**-N from wastewater by treatment with bromides and contacting with O3 and solid **catalysts**)
IT Wastewater treatment
(ozonization, removal of **NH3**-N from wastewater by treatment with bromides and contacting with O3 and solid **catalysts**)
IT 7429-90-5, Aluminum, uses 7439-88-5, Iridium, uses 7439-89-6, Iron, uses 7439-95-4, Magnesium, uses 7439-96-5, Manganese, uses 7440-02-0, Nickel, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-24-6, Strontium, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-39-3, Barium, uses 7440-44-0, Carbon, uses 7440-45-1, Cerium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-70-2, Calcium, uses
(removal of **NH3**-N from wastewater by treatment with bromides and contacting with O3 and solid **catalysts**)
IT 1304-28-5P, Barium oxide, uses 1305-78-8P, Calcium oxide, uses **1306-38-3P**, Cerium oxide (CeO2), uses **1307-96-6P**, Cobalt oxide (CoO), uses 1309-48-4P, Magnesium oxide, uses 1313-99-1P, Nickel oxide, uses 1314-11-0P, Strontium oxide, uses 1314-23-4P, Zirconia, uses 1314-35-8P, Tungsten oxide, uses 1317-38-0P, Copper oxide (CuO), uses 7631-86-9P, Silica, uses 13463-67-7P, Titania, uses 111346-19-1P, Titanium zirconium oxide (Ti0.7Zr0.3O2) 113515-14-3P, Copper iron oxide (Cu0.33Fe1.33O2.33) 157466-71-2P, Barium magnesium nickel oxide (Ba0.11Mg0.23Ni0.66O) 169554-76-1P, Cerium titanium zirconium oxide (Ce0.03Ti0.83Zr0.14O2) 169554-77-2P, Calcium cobalt tungsten oxide (Ca0.38Co0.61W0.02O1.03) 169554-78-3P, Titanium oxide silicate (Ti0.69O0.77(SiO4)0.31) 169554-79-4P, Iron strontium oxide (Fe0.99Sr0.51O1.99)
(removal of **NH3**-N from wastewater by treatment with bromides and contacting with O3 and solid **catalysts**)
IT 7758-02-3, Potassium bromide, uses 10028-15-6, Ozone, uses
(removal of **NH3**-N from wastewater by treatment with bromides and contacting with O3 and solid **catalysts**)
IT 14798-03-9, Ammonium, processes
(removal of **NH3**-N from wastewater by treatment with

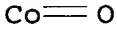
bromides and contacting with O3 and solid **catalysts**)

L24 ANSWER 3 OF 18 HCA COPYRIGHT 1999 ACS
120:80828 **Catalyst** for the **oxidation** of **ammonia** to nitrogen oxides. Nielsen, Poul Erik Hojlund; Johansen, Keld (Haldor Topsoe A/S, Den.). Eur. Pat. Appl. EP 562567 A1 19930929, 7 pp. DESIGNATED STATES: R: BE, DE, ES, FR, GB, IT, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1993-104797 19930323. PRIORITY: DK 1992-383 19920323.

AB Oxides of nonprecious metals supported on a monolithic carrier of a heat-resistant material are used as the **catalyst** for the formation of NOx from **ammonia**. Optionally, the active **catalytic** component is doped with Ce, Zn, Cd, or Li. The **catalysts** have high-mech. resistance and selectivity.

IT **1307-96-6**, Cobalt oxide (CoO), uses **1308-04-9**, Cobaltic oxide
(**oxidn. catalyst**, for **ammonia oxidn.** to nitrogen oxides)

RN 1307-96-6 HCA
CN Cobalt oxide (CoO) (8CI, 9CI) (CA INDEX NAME)



RN 1308-04-9 HCA
CN Cobalt oxide (Co2O3) (8CI, 9CI) (CA INDEX NAME)

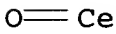
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7664-41-7**, **Ammonia**, reactions
(**oxidn.** of, for nitrogen oxides, supported nonprecious metal oxide **catalysts** for)

RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

IT **1306-38-3**, Ceria, uses **1312-81-8**, Lanthania
(supports, heat-resistant, for **ammonia oxidn. catalysts**)

RN 1306-38-3 HCA
CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)



RN 1312-81-8 HCA
CN Lanthanum oxide (La2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IC ICM C01B021-26
CC 49-8 (Industrial Inorganic Chemicals)
Section cross-reference(s): 67
ST **ammonia oxidn catalyst** nitrogen oxide; nonprecious metal oxide **oxidn catalyst**
IT **Oxidation catalysts**
(supported, for **ammonia oxidn.**, for selectivity and strength)
IT Rare earth oxides
Kaolin, uses
(supports, heat-resistant, for **ammonia oxidn. catalysts**)
IT 10102-43-9P, Nitrogen monoxide, preparation 10102-44-0P, Nitrogen dioxide, preparation 11104-93-1P, Nitrogen oxide, preparation
(manuf. of, by **ammonia oxidn.**, nonprecious metal oxide **catalysts** for)
IT 7439-93-2, Lithium, uses 7440-43-9, Cadmium, uses 7440-45-1, Cerium, uses 7440-66-6, Zinc, uses
(**oxidn. catalyst** doped with, for **ammonia oxidn.** to nitrogen oxides)
IT 1304-76-3, Bismuth oxide (Bi2O3), uses **1307-96-6**, Cobalt oxide (CoO), uses **1308-04-9**, Cobaltic oxide 1309-37-1, Ferric oxide, uses 1345-25-1, Ferrous oxide, uses 11118-57-3, Chromium oxide 11129-60-5, Manganese oxide
(**oxidn. catalyst**, for **ammonia oxidn.** to nitrogen oxides)
IT **7664-41-7**, **Ammonia**, reactions
(**oxidn.** of, for nitrogen oxides, supported nonprecious metal oxide **catalysts** for)
IT 1302-93-8, Mullite **1306-38-3**, Ceria, uses 1309-48-4, Magnesia, uses **1312-81-8**, Lanthania 1314-23-4, Zirconia, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 13463-67-7, Titania, uses
(supports, heat-resistant, for **ammonia oxidn. catalysts**)

L24 ANSWER 4 OF 18 HCA COPYRIGHT 1999 ACS
102:83834 Wet **oxidation** of **ammonia catalyzed** by cerium-based composite oxides. Imamura, Seiichiro; Doi, Akira; Ishida, Shingo (Dep. Chem., Kyoto Inst. Technol., Kyoto, 606, Japan). Ind. Eng. Chem. Prod. Res. Dev., 24(1), 75-80 (English) 1985. CODEN: IEPRA6. ISSN: 0196-4321.
AB Wet **oxidn.** of **NH3** was carried out in the presence of Ce-based composite oxide **catalysts**. The reaction proceeded rapidly in the high-pH region, indicating that **NH3** was more reactive than NH4+. The Co/Ce and Mn/Ce composite oxides were remarkably active. The max. percentage decrease in **NH3** was attained at a Ce content of .apprx.20 mol % for Co/Ce and 20-50 mol % for Mn/Ce, resp. The **catalysts** exhibited high activity in the decompn. of H2O2, which suggested that the high activity of these composite oxides in

the **oxidn.** of **NH3** was due partly to their redox properties. It was found that their strong affinity toward **NH3** also contributed to their high activity in the **oxidn.** of **NH3**. ESR spectral anal. indicated that interactions between Co and Ce and between Mn and Ce were present in these composite oxides. The activity of the Mn/Ce **catalysts** was higher than that of water-sol. Cu compds. which are known as the most active **catalyst** in wet **oxidn.**

IT **1308-87-8 1312-81-8 1313-97-9**
1314-37-0 12036-32-7 12055-62-8
12060-58-1 12061-16-4 12064-62-9
(bismuth cobalt oxide **catalysts** contg., for wet **oxidn.** of **ammonia**, wastewater treatment in relation to)

RN 1308-87-8 HCA
CN Dysprosium oxide (Dy2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 1312-81-8 HCA
CN Lanthanum oxide (La2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 1313-97-9 HCA
CN Neodymium oxide (Nd2O3) (7CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 1314-37-0 HCA
CN Ytterbium oxide (Yb2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 12036-32-7 HCA
CN Praseodymium oxide (Pr2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Pr	2	7440-10-0

RN 12055-62-8 HCA
CN Holmium oxide (Ho2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ho	2	7440-60-0

RN 12060-58-1 HCA
CN Samarium oxide (Sm2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 12061-16-4 HCA
CN Erbium oxide (Er2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 12064-62-9 HCA
CN Gadolinium oxide (Gd2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **1308-06-1**
(**catalysts**, contg. cerium oxide, for wet **oxidn**
. of **ammonia**, wastewater treatment in relation to)
RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **1306-38-3**, uses and miscellaneous
(**catalysts**, contg. transition metal oxides, for wet
oxidn. of **ammonia**, wastewater treatment in
relation to)
RN 1306-38-3 HCA
CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)

O=Ce=O

IT **7664-41-7**, reactions
(**oxidn.** of, wet, cerium oxide-based composite metal
oxide **catalysts** for, wastewater treatment in relation
to)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 60-2 (Waste Treatment and Disposal)
Section cross-reference(s): 67
ST wastewater **ammonia** wet **oxidn catalyst**;
cerium composite oxide **oxidn catalyst**; cobalt
composite oxide **oxidn catalyst**; manganese
composite oxide **oxidn catalyst**
IT Transition metal oxides
(cerium oxide-contg., for wet **oxidn.** of **ammonia**
, wastewater treatment in relation to)
IT **Oxidation catalysts**
(wet, cerium oxide-based composite oxides as, for **ammonia**
, wastewater treatment in relation to)
IT Wastewater treatment
(wet **oxidn.**, **ammonia** removal in, cerium
oxide-based composite oxide **catalysts** for)

IT **1308-87-8 1312-81-8 1313-97-9**
1314-37-0 12036-32-7 12055-62-8
12060-58-1 12061-16-4 12064-62-9
(bismuth cobalt oxide **catalysts** contg., for wet **oxidn.** of **ammonia**, wastewater treatment in relation to)

IT 1313-99-1, uses and miscellaneous
(**catalysts** contg., wet **oxidn.** of **ammonia** by, wastewater treatment in relation to)

IT **1308-06-1** 1317-34-6 14899-50-4
(**catalysts**, contg. cerium oxide, for wet **oxidn**. of **ammonia**, wastewater treatment in relation to)

IT **1306-38-3**, uses and miscellaneous
(**catalysts**, contg. transition metal oxides, for wet **oxidn.** of **ammonia**, wastewater treatment in relation to)

IT 7722-84-1, uses and miscellaneous
(decompn. of, mixed **catalyst** activity for, activity for **ammonia** wet **oxidn.** in relation to)

IT **7664-41-7**, reactions
(**oxidn.** of, wet, cerium oxide-based composite metal oxide **catalysts** for, wastewater treatment in relation to)

L24 ANSWER 5 OF 18 HCA COPYRIGHT 1999 ACS
101:75244 Nitrogen oxide prepared by **ammonia oxidation**. Vosolsobe, Jan; Simecek, Antonin; Bernauer, Bohumil; Jurovcak, Ondrej; Collak, Mikolas; Svergo, Jan; Harmaniak, Ivan; Dohnalek, Rudolf (Czech.). Czech. CS 206957 B 19840701, 2 pp. (Czech). CODEN: CZXXA9. APPLICATION: CS 1979-6348 19790920.

AB A Co3O4 **catalyst**, optionally with Ce4+ and Th4+ promoters, compared favorably with traditionally used Pt. Thus, passing a mixt. of 11.5% **NH3** and **air** at 780-820.degree. and 2000 L/h through a 30-mm layer of a bead **catalyst**, contg. 95.5% Co3O4, 2.4% CeO2, and 2.1% ThO2 on a ZrO2 support, on a Pt gauze gave 98.8% conversion of **NH3** to NO.

IT **1308-06-1**
(**catalysts**, for **oxidn.** of **ammonia** to nitric oxide)

RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

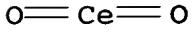
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7664-41-7**, reactions
(**oxidn.** of, cobalt oxide **catalyst** promoted by cerium oxide and thorium oxide for)

RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IT **1306-38-3**, uses and miscellaneous
(promoter, for cobalt oxide **catalyst** for **oxidn**
. of **ammonia**)
RN 1306-38-3 HCA
CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)



IC C01B021-26
CC 49-2 (Industrial Inorganic Chemicals)
ST nitrogen oxide manuf **ammonia oxidn**;
ammonia oxidn catalyst cobalt oxide;
cerium oxide **catalyst** promoter; thorium oxide
catalyst promoter
IT **Oxidation catalysts**
(cobalt oxide, with cerium oxide and thorium oxide promoters for
ammonia to nitric oxide)
IT **1308-06-1**
(**catalysts**, for **oxidn**. of **ammonia**
to nitric oxide)
IT 10102-43-9P, preparation
(manuf. of, by **oxidn**. of **ammonia**, cobalt
oxide **catalyst** promoted by cerium oxide and thorium
oxide for)
IT **7664-41-7**, reactions
(**oxidn**. of, cobalt oxide **catalyst** promoted by
cerium oxide and thorium oxide for)
IT **1306-38-3**, uses and miscellaneous 1314-20-1, uses and
miscellaneous
(promoter, for cobalt oxide **catalyst** for **oxidn**
. of **ammonia**)

L24 ANSWER 6 OF 18 HCA COPYRIGHT 1999 ACS
87:58899 The effect of metal oxides on platinum-rhodium gauze
catalysts for the **oxidation** of **ammonia**.
Busby, J. A.; Trimm, D. L. (Dep. Chem. Eng. Chem. Technol., Imp.
Coll., London, Engl.). Chem. Eng. J. (Lausanne), 13(2), 149-51
(English) 1977. CODEN: CMEJAJ.
AB The effects were studied of 16 metal oxide dopants on Pt-10% Rh
gauze **catalysis** of **oxidn**. of HN3 to NO. Most
dopants increased the light-off temp. (at which **oxidn**.
increases rapidly) and decreased the **NH3** conversion from
the 98% of undoped O-activated gauze, probably by decreasing the
supply of adsorbed O on the gauze surface.
IT **1306-38-3**, uses and miscellaneous **1308-06-1**
(doping by, of platinum-rhodium **catalyst** for
oxidn. of **ammonia**)
RN 1306-38-3 HCA
CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)

O═Ce═O

RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7664-41-7**, reactions
(**oxidn.** of, to nitric oxide, oxide doping of platinum-rhodium **catalysts** for)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 67-2 (Catalysis and Reaction Kinetics)
ST metal oxide dopant platinum rhodium; oxide dopant platinum rhodium **catalyst**; **oxidn catalyst** platinum rhodium oxide; **ammonia oxidn** nitric oxide
IT Alkaline earth oxides
Transition metal oxides
(doping by, of platinum-rhodium **catalyst** for **oxidn.** of **ammonia**)
IT **Oxidation catalysts**
(platinum-rhodium, for **ammonia** to nitric oxide, oxide dopant effects on)
IT 11125-17-0
(**catalysis** by oxygen-activated, of **ammonia** **oxidn.** to nitric oxide, oxide dopant effects on)
IT 1304-28-5, uses and miscellaneous 1305-78-8, uses and miscellaneous **1306-38-3**, uses and miscellaneous **1308-06-1** 1308-38-9, uses and miscellaneous 1309-48-4, uses and miscellaneous 1310-58-3, uses and miscellaneous 1310-73-2, uses and miscellaneous 1313-99-1, uses and miscellaneous 1314-13-2, uses and miscellaneous 1314-20-1, uses and miscellaneous 1314-23-4, uses and miscellaneous 1314-62-1, uses and miscellaneous 1317-38-0, uses and miscellaneous 1344-28-1, uses and miscellaneous 1344-43-0, uses and miscellaneous 1344-54-3 7631-86-9, uses and miscellaneous
(doping by, of platinum-rhodium **catalyst** for **oxidn.** of **ammonia**)
IT **7664-41-7**, reactions
(**oxidn.** of, to nitric oxide, oxide doping of platinum-rhodium **catalysts** for)
IT 10099-59-9
(platinum-rhodium **catalyst** doping with, **ammonia** **oxidn.** in relation to)

L24 ANSWER 7 OF 18 HCA COPYRIGHT 1999 ACS
86:178179 Cobalt oxide **catalyst**. Shannon, Ian Robertson (Imperial Chemical Industries Ltd., Engl.). Ger. Offen. DE 2641522 19770407, 17 pp. (German). CODEN: GWXXBX. PRIORITY: GB 1975-38033 19750916.

AB Co3O4 **catalysts** contg. decreased amts. of Pb and Ca impurities were prepd. Pb was <10 ppm, while Ca was <20 ppm. The **catalysts** were used in **oxidn.** of **NH3** to N oxides. The **catalysts** also contained Ce oxide. In examples, the low Pb and Ca impurities were obtained by using reagents low in Pb and Ca and by removing Pb and Ca by washing the **catalyst** with acids.

IT **1308-06-1**
(**catalysts**, low in calcium and lead, for **oxidn** . of **ammonia** to nitrogen oxides)
RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **1306-38-3**, uses and miscellaneous
(**catalysts**, with cobalt oxide, low in calcium and lead, for **oxidn.** of **ammonia** to nitrogen oxide)
RN 1306-38-3 HCA
CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)

O═Ce═O

IT **7664-41-7**, reactions
(**oxidn.** of, to nitrogen oxides, cobalt oxide **catalysts** for, low in calcium and lead)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IC B01J023-82
CC 67-1 (Catalysis and Reaction Kinetics)
ST cobalt oxide **catalyst oxidn ammonia**; cerium cobalt oxide **catalyst ammonia**
IT **Oxidation catalysts**
(cobalt oxide, low in calcium and lead, for **ammonia oxidn.** to nitrogen oxides)
IT **1308-06-1**
(**catalysts**, low in calcium and lead, for **oxidn** . of **ammonia** to nitrogen oxides)
IT **1306-38-3**, uses and miscellaneous
(**catalysts**, with cobalt oxide, low in calcium and lead, for **oxidn.** of **ammonia** to nitrogen oxide)

IT **7664-41-7**, reactions
(**oxidn.** of, to nitrogen oxides, cobalt oxide **catalysts** for, low in calcium and lead)

L24 ANSWER 8 OF 18 HCA COPYRIGHT 1999 ACS
86:128089 Regeneration of **catalysts.** Senes, Michel (Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques, Fr.). Fr. Demande FR 2291792 19760618, 9 pp. (French). CODEN: FRXXBL. APPLICATION: FR 1974-38081 19741120.
AB Ce2O3-promoted Co3O4 **catalyst** beds for gaseous **oxidn.** of **NH3** to NO2 were regenerated in the reactor by redn. in a reducing H flame for 1/2 to 1 min. followed by reoxidn. in the **oxidizing** reactant gas stream. The **catalyst** bed temp. was held between 300.degree. and 850.degree. during the regeneration steps. A multiple orifice, rotating tubular H burner was positioned up stream of the **catalyst** bed in the reactor and ignited when it was desired to reduce the **catalyst.** Alternately, the **catalyst** could be reduced in a dild. H stream and reoxidized in a dild. O stream, to prevent overheating.
IT **1345-13-7**
(**catalysts** of cobalt oxide and, for **oxidn.** of **ammonia** to nitrogen dioxide, regeneration of)
RN 1345-13-7 HCA
CN Cerium oxide (Ce2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **1308-06-1**
(**catalysts** promoted with cerium oxide, for **oxidn.** of **ammonia** to nitrogen dioxide, regeneration of)
RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7664-41-7**, reactions
(**oxidn.** of, to nitrogen dioxide, regeneration of **catalysts** for)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IC B01J023-94
CC 67-1 (Catalysis and Reaction Kinetics)
Section cross-reference(s): 48
ST **ammonia oxidn catalyst** regeneration; cerium cobalt oxide **catalyst** regeneration
IT **Oxidation catalysts**
(cobalt oxide-cerium oxide, for **ammonia** to nitrogen

dioxide, regeneration of)
IT **1345-13-7**
(**catalysts** of cobalt oxide and, for **oxidn.** of **ammonia** to nitrogen dioxide, regeneration of)
IT **1308-06-1**
(**catalysts** promoted with cerium oxide, for **oxidn.** of **ammonia** to nitrogen dioxide, regeneration of)
IT 10102-44-0P, preparation
(manuf. of, by **oxidn.** of **ammonia**, regeneration of **catalysts** for)
IT 1333-74-0, uses and miscellaneous
(**oxidn. catalyst** regeneration by treatment with reducing flame of)
IT **7664-41-7**, reactions
(**oxidn.** of, to nitrogen dioxide, regeneration of **catalysts** for)

L24 ANSWER 9 OF 18 HCA COPYRIGHT 1999 ACS
85:83630 **Ammonia oxidation** over metal oxides.
Il'chenko, N. I.; Vorotyntsev, V. M.; Avilova, I. M. (Inst. Fiz. Khim. im. Pisarzhevskogo, Kiev, USSR). Kinet. Katal., 17(2), 378-85 (Russian) 1976. CODEN: KNKTA4.
AB The specific **catalytic** activity of metal oxides in low temp. (<380.degree.) **NH3 oxidn.** is in the order Co_3O_4, MnO_2 > CuO > CaO_2 > NiO > Bi_2O_3 > Fe_2O_3 > V_2O_5 > TiO_2 > CdO > PbO > ZnO > SnO_2 > ZrO_2 > MoO_3 > CeO_2 > WO_3. The selectivity of the metal oxides to **catalyze** N_2 formation is proportional inversely to their **catalytic** activity. The dependence of **catalytic** activity and selectivity on the strength of the O-**catalyst** bond is not monotonous. A dependence of the same character was obsd. for oxides of nontransition and transition metals but different behavior of transition metals due to the activation of N-H bond in the process was found. The extended Hueckel theory was used to calc. bond energies and bond lengths of models of surface complexes MO, MO_2, and HN-MO_2, where M = Ti, V, Cr, Mn. From the calcns. follows that the changes of **catalytic** activity of metal oxide **catalysts** are in relation to the changes in energy of O-metal oxide bond.
IT **1306-38-3 1308-06-1**
(**catalysis** by, of **ammonia oxidn.**)
RN 1306-38-3 HCA
CN Cerium oxide (CeO_2) (8CI, 9CI) (CA INDEX NAME)

O=Ce=O

RN 1308-06-1 HCA
CN Cobalt oxide (Co_3O_4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7664-41-7**, reactions
(**oxidn.** of, metal oxide **catalysis** of)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 67-2 (Catalysis and Reaction Kinetics)
ST metal oxide **catalysis ammonia oxidn**; transition metal oxide **catalysis**
IT Transition metal oxides
(**catalysis** by, of **ammonia oxidn.**)
IT **Oxidation catalysts**
(metal oxides, for **ammonia**)
IT 1304-76-3 1305-79-9 1306-19-0 **1306-38-3** **1308-06-1** 1309-37-1, uses and miscellaneous 1313-13-9, uses and miscellaneous 1313-27-5, uses and miscellaneous 1313-99-1, uses and miscellaneous 1314-13-2, uses and miscellaneous 1314-23-4, uses and miscellaneous 1314-35-8 1314-62-1, uses and miscellaneous 1317-36-8, uses and miscellaneous 1317-38-0, uses and miscellaneous 13463-67-7, uses and miscellaneous 18282-10-5
(**catalysis** by, of **ammonia oxidn.**)
IT **7664-41-7**, reactions
(**oxidn.** of, metal oxide **catalysis** of)

L24 ANSWER 10 OF 18 HCA COPYRIGHT 1999 ACS
85:68887 Manufacture and regeneration of **catalysts**. Senes, Michel; Gourdier, Jean F.; Lhonore, Pierre; Quibel, Jacques (Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques, Fr.). Fr. Demande FR 2272729 19751226, 8 pp. (French). CODEN: FRXXBL. APPLICATION: FR 1974-19010 19740531.
AB A soln. contg. Co and Ce nitrates was sprayed with **air** into a rotating drum furnace at 400.degree. to produce tiny porous beads contg. 97 wt. % Co3O4 and 3% Ce2O3. About 750 kg. of this **catalyst** was used to **oxidize NH3** to NO2 at 800.degree., with 96% yield, in a 40 ton per day plant. A spent **catalyst** bed was regenerated by heating it above the decompn. temp. of the **catalyst** soln., and spraying the **catalyst** soln. on the hot bed to recoat the particles with 0.8 wt. % **catalyst**. This spraying process yields a more homogeneous and active **catalyst** than older methods. **Catalyst** contg. an addnl. 0.007% Pt yielded 97% NO2.
IT **1308-06-1** **1345-13-7**
(**catalysts**, for **oxidn.** of **ammonia** to nitrogen dioxide)
RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 1345-13-7 HCA
CN Cerium oxide (Ce2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

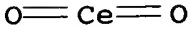
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7664-41-7**, reactions
(**oxidn.** of, to nitrogen dioxide, **catalysts** for)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IC B01J011-00
CC 67-1 (Catalysis and Reaction Kinetics)
ST **oxidn catalyst ammonia** nitrogen dioxide; cobalt oxide **catalyst ammonia oxidn**; cerium oxide **catalyst ammonia oxidn**; platinum oxide **catalyst ammonia oxidn**
IT **Oxidation catalysts**
(cobalt oxide-cerium oxide, for **ammonia** to nitrogen dioxide)
IT 10102-44-0P, preparation
(by **oxidn.** of **ammonia**, **catalysts** for)
IT **1308-06-1 1345-13-7**
(**catalysts**, for **oxidn.** of **ammonia** to nitrogen dioxide)
IT **7664-41-7**, reactions
(**oxidn.** of, to nitrogen dioxide, **catalysts** for)
IT 7440-06-4, uses and miscellaneous
(promoter, for cobalt oxide-cerium oxide **catalysts** for **oxidn.** of **ammonia** to nitric oxide)

L24 ANSWER 11 OF 18 HCA COPYRIGHT 1999 ACS
85:52325 Cobalt oxide **catalyst** for the **oxidation** of **ammonia**. Ray, Jean L.; Laugier, Robert (Rhone-Progil, Fr.). Ger. Offen. DE 2462139 19760506, 12 pp. Division of Ger. Offen. 2,413,171. (German). CODEN: GWXXBX. PRIORITY: FR 1973-9862 19730320.
AB **Catalysts** were prepd. for **oxidn.** of **NH3** to HNO3. The **catalysts** contain Co3O4 .ltoreq.95%, Al2O3 5-15%, and ThO2 or CeO2 .ltoreq.25%. The **catalysts** were made from nitrates, by treatment with NH4 carbonate to form hydroxides, filtration, washing, drying, and heat-treatment.
IT **1306-38-3**
(**catalyst**, with cobalt oxide, for **oxidn.** of **ammonia** to nitric acid)
RN 1306-38-3 HCA

CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)



IT **1308-06-1**
(**catalyst**, with oxides, for **oxidn.** of **ammonia** to nitric acid)
RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7664-41-7**, reactions
(**oxidn.** of, to nitric acid, cobalt oxide multicomponent **catalyst** for)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

IC B01J023-74
CC 67-1 (Catalysis and Reaction Kinetics)
ST **ammonia oxidn catalyst** cobalt oxide; nitric acid manuf **ammonia catalyst**; aluminum cobalt **oxidn catalyst ammonia**; thorium cobalt **oxidn catalyst ammonia**; cerium cobalt **oxidn catalyst ammonia**
IT **Oxidation catalysts**
(cobalt oxide, with oxides, for **ammonia oxidn**. to nitric acid)
IT **1306-38-3** 1314-20-1, uses and miscellaneous 1344-28-1, uses and miscellaneous
(**catalyst**, with cobalt oxide, for **oxidn.** of **ammonia** to nitric acid)
IT **1308-06-1**
(**catalyst**, with oxides, for **oxidn.** of **ammonia** to nitric acid)
IT 7697-37-2P, preparation
(from **ammonia, oxidn. catalyst** for, cobalt oxide multicomponent)
IT **7664-41-7**, reactions
(**oxidn.** of, to nitric acid, cobalt oxide multicomponent **catalyst** for)

L24 ANSWER 12 OF 18 HCA COPYRIGHT 1999 ACS
82:61387 **Catalysts** for **oxidation** of **ammonia**. Senes, Michel; Pottier, Michel; Gourdier, Jean F. (Societe Chimique de la Grande Paroisse , Azote et Produits Chimiques). Fr. Demande FR 2209713 19740705, 5 pp. Addn. to Fr. Demande 2,187,687

(See Ger. 2,329,962, CA 81: 39568p). (French). CODEN: FRXXBL. APPLICATION: FR 1972-21544 19720615.

AB The **catalyst** compns. of the parent patent are modified by inclusion of an alkali metal in an amt. of 0.05 to 0.5 wt. % expressed as oxide. Thus, nitrates of Co, Ce, and K in amts. to provide a final compn. of Co3O4 97.6, Ce2O3 2.2, and K2O 0.2 wt. % were mixed and heated at 700.degree.. On cooling the mixt. gave a spinel type structure. For use the material is ground to a particle size of 3-6 mm.

IT **1308-06-1**
(**catalysts**, contg. cerium oxide and potassium oxide, for **ammonia oxidn.**)

RN 1308-06-1 HCA

CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **1345-13-7**
(**catalysts**, contg. cobalt oxide and potassium oxide, for **ammonia oxidn.**)

RN 1345-13-7 HCA

CN Cerium oxide (Ce2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7664-41-7**, reactions
(**oxidn.** of, **catalyst** for)

RN 7664-41-7 HCA

CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IC C01B

CC 49-10 (Industrial Inorganic Chemicals)
Section cross-reference(s): 67

ST **ammonia oxidn catalyst**; alkali metal **catalyst** activation

IT **Oxidation catalysts**
(for **ammonia**)

IT 12136-45-7
(**catalysts**, contg. cerium oxide and cobalt oxide, for **ammonia oxidn.**)

IT **1308-06-1**
(**catalysts**, contg. cerium oxide and potassium oxide, for **ammonia oxidn.**)

IT **1345-13-7**
(**catalysts**, contg. cobalt oxide and potassium oxide, for **ammonia oxidn.**)

IT **7664-41-7**, reactions
(**oxidn.** of, **catalyst** for)

L24 ANSWER 13 OF 18 HCA COPYRIGHT 1999 ACS

82:61351 **Catalysts** for **oxidation** of **ammonia**
. Ray, Jean L.; Laugier, Robert (Rhone-Progil). Ger. Offen. DE 2413171 19741010, 13 pp. (German). CODEN: GWXXBX. PRIORITY: FR 1973-9862 19730320.

AB **Catalysts** of good mech. strength and long lifetime for **NH3 oxidn.** contained .ltoreq.90% Co3O4 and one or two of the oxides CeO2, Al2O3, and ThO2 and were manufd. from the corresponding nitrate hydrates by pptn., pressing to pellets or extruding, and calcining 3 hr at 1000.degree.. Thus, an aq. soln. contg. 125 g (NH4)2CO3/l. was added to 2 l. aq. soln. contg. Co(NO3)2.6H2O 434, Al(NO3)3.9H2O 112, and Th(NO3)4.4H2O 31 g, the ppts. were filtered, washed, dried at 120.degree., calcined 2 hr at 550.degree., sieved to grain size 100-400 .mu.m, pelleted, and calcined 3 hr at 1000.degree. to give **catalyst** pellets consisting of Co3O4 80, Al2O3 10, and ThO2 10% and having sp. surface 3.3 m2/g and compressive strength 16 kg. **Oxidn.** of **NH3** over this **catalyst** gave NO + NO2 in 95.3 and 94.8% yield initially and after operation for 400 hr, resp.

IT **1306-38-3**
(**catalysts**, contg. cobalt oxide for **oxidn.** of **ammonia**)

RN 1306-38-3 HCA

CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)

IT **1308-06-1**
(**catalysts**, contg. metal oxides for **oxidn.** of **ammonia**)

RN 1308-06-1 HCA

CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7664-41-7**, reactions
(**oxidn.** of, cobalt oxide-metal oxide **catalysts** for, nitrogen oxides from)

RN 7664-41-7 HCA

CN Ammonia (8CI, 9CI) (CA INDEX NAME)

IC B01J; C01B

CC 49-8 (Industrial Inorganic Chemicals)

ST cobalt oxide **catalyst oxidn**; cerium cobalt oxide **catalyst**; alumina cobalt oxide **catalyst**; thoria cobalt oxide **catalyst**; **ammonia oxidn catalyst**

IT **Oxidation catalysts**

(cobalt oxide-metal oxide, for **ammonia** to nitrogen oxides)
IT **1306-38-3** 1314-20-1, uses and miscellaneous 1344-28-1, uses and miscellaneous
(**catalysts**, contg. cobalt oxide for **oxidn.** of **ammonia**)
IT **1308-06-1**
(**catalysts**, contg. metal oxides for **oxidn.** of **ammonia**)
IT 10102-43-9P, preparation 10102-44-0P, preparation
(from **ammonia**, cobalt oxide-metal oxide **oxidn**. **catalysts** for)
IT **7664-41-7**, reactions
(**oxidn.** of, cobalt oxide-metal oxide **catalysts** for, nitrogen oxides from)

L24 ANSWER 14 OF 18 HCA COPYRIGHT 1999 ACS
81:39568 **Oxidation catalysts** for **ammonia.**
Senes, Michel; Pottier, Michel; Gourdier, Jean F. (Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques). Ger. Offen. DE 2329962 19740103, 13 pp. (German). CODEN: GWXXBX. PRIORITY: FR 1972-21544 19720615.
AB **Catalysts** contg. Co3O4 88-97.6, Ce2O3 2.2-3, Nd2O3 0.2-3, Mn3O4 0-3, Cr2O3 0-2, and Fe3O4 0-1% were made from salt mixts. and used in the **catalytic oxidn.** of **NH3** to NO2 at high space velocities. Thus, a **catalyst** contg. Co3O4 93, Ce2O3 3, Nd2O3 3, and Mn3O4 1% was made by melting a corresponding nitrate-oxide mixt. at 700.degree. and granulation. A 0.096:1 **NH3**-(**NH3** + **air**) mixt. preheated to 100.degree. was passedover the above **catalyst** in a fluidized bed at 772-80.degree. and space velocity 100,000 hr-1 to give 95% NO2.
IT **1313-97-9 1345-13-7**
(**catalysts**, cobalt oxide, for **oxidn.** of **ammonia**)
RN 1313-97-9 HCA
CN Neodymium oxide (Nd2O3) (7CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1345-13-7 HCA
CN Cerium oxide (Ce2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **1308-06-1**
(**catalysts**, for **oxidn.** of **ammonia**)
RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7664-41-7**, reactions
(**oxidn.** of, cobalt oxide **catalysts** for)
RN 7664-41-7 HCA

CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IC B01J; C01B
CC 49-8 (Industrial Inorganic Chemicals)
ST cobalt oxide **catalyst**; **ammonia oxidn catalyst**; cerium oxide **catalyst**; neodymium oxide **catalyst**; chromium oxide **catalyst**; manganese oxide **catalyst**; iron oxide **catalyst**; nitrogen oxide
IT **Oxidation catalysts**
(cobalt oxide, for **ammonia**)
IT 1308-38-9, uses and miscellaneous **1313-97-9** 1317-35-7 1317-61-9 **1345-13-7**
(**catalysts**, cobalt oxide, for **oxidn.** of **ammonia**)
IT **1308-06-1**
(**catalysts**, for **oxidn.** of **ammonia**)
IT 10102-44-0P, preparation
(from **ammonia**, cobalt oxide **catalysts** for)
IT **7664-41-7**, reactions
(**oxidn.** of, cobalt oxide **catalysts** for)

L24 ANSWER 15 OF 18 HCA COPYRIGHT 1999 ACS
77:66687 Active cobalt oxide-containing **catalysts**. Hughes, David Owen (African Explosives and Chemical Industries Ltd.). S. African ZA 7004407 19711228, 18 pp. (English). CODEN: SFXXAB. APPLICATION: ZA 1970-4407 19710609.
AB Shaped **catalyst** bodies comprising active Co(II, III) oxide and 1-25 by wt. of oxide(s) of Sc, Y, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu, are prepd. by copptg. carbonates or bicarbonates from nitrate soln. by addn. of ammonium or alkali metal carbonates or bicarbonates. The ppt. is dried and heated to 200-450.degree. for sufficient time to convert the (bi)carbonates to oxides. The mixt. is then ground, pressed, and heated at 600-850.degree. for sufficient time to give shaped **catalyst** bodies suitable for industrial processes. Thus, 149 parts by wt. Na2CO3 were used to coppt. basic carbonates from a soln. at 75.degree. of 326 parts Co(NO3)2.6H2O and 10 parts Sc2O3. The ppt. was filtered, slurried in hot water and refiltered, and the dried filter cake was heated at 300.degree. for 16 hr. The resulting mixt. of oxides was milled to pass through BS. sieve 60, and moistened material was extruded to 4 .times. 4 mm. These extrusions were heated at 700.degree. for 1 hr. The resulting **catalyst** was tested in a **NH3 oxidn.** reactor, and it was found to be more active than a **catalyst** contg. only Co(II, III) oxide.
IT **1308-06-1**
(**catalysts**, for **oxidn.** of **ammonia**, shaping of rare earth oxide-contg.)

RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7664-41-7**, reactions
(**oxidn.** of, to nitric oxide, shaped cobalt oxide-rare earth oxide **catalysts** for)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IT **12036-05-4 12036-41-8 12401-90-0 12680-02-3**
(promoter, for cobalt oxide **catalysts** for **oxidn**. of **ammonia** to nitric acid)
RN 12036-05-4 HCA
CN Praseodymium oxide (PrO2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Pr=O

RN 12036-41-8 HCA
CN Terbium oxide (Tb2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 12401-90-0 HCA
CN Neodymium oxide (NdO2) (6CI, 8CI, 9CI) (CA INDEX NAME)

O=Nd=O

RN 12680-02-3 HCA
CN Lanthanum oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
La	x	7439-91-0

CC 67-1 (Catalysis and Reaction Kinetics)
ST cobalt oxide **catalyst** rare earth
IT **Oxidation catalysts**
(cobalt oxide-rare earth oxide, for **ammonia** to nitric acid)
IT Rare earth oxides
(promoters, for cobalt oxide **catalysts** for

oxidn. of **ammonia** to nitric acid)
IT 10102-43-9P, properties
(**catalysts** for, shaped cobalt oxide-rare earth oxide)
IT **1308-06-1**
(**catalysts**, for **oxidn.** of **ammonia**, shaping of rare earth oxide-contg.)
IT **7664-41-7**, reactions
(**oxidn.** of, to nitric oxide, shaped cobalt oxide-rare earth oxide **catalysts** for)
IT 1314-36-9 11129-18-3 **12036-05-4 12036-41-8** 12060-08-1 **12401-90-0 12680-02-3**
(promoter, for cobalt oxide **catalysts** for **oxidn** . of **ammonia** to nitric acid)

L24 ANSWER 16 OF 18 HCA COPYRIGHT 1999 ACS
76:132066 Making porous, shaped supported **catalysts**. Stander, Cornelius M.; Hughes, David Owen (African Explosives and Chemical Industries Ltd.). S. African ZA 6908637 19710614, 18 pp. (English). CODEN: SFXXAB. APPLICATION: ZA 1969-8637 19691212.
AB **Catalysts** with improved activity and strength are prepd., without sintering, by forming a mixt. of Al(NO3)3 or TiO2 with an alk. earth metal nitrate, such as Ca(NO3)2, and the nitrate of a metal oxide **catalyst**, such as Co(NO3)2, and heating to 250-300.degree., after which the Al and Co salts are converted to their oxides and the mixt. has a slightly sticky consistency. The mixt. is then pelletized and heated, in **air**, to 680-750.degree., at which temp. CaAl2O4 is formed and the Co3O4 remains unchanged. The **catalyst** thus formed when screened for activity by passing a mixt. of 10 **NH3** in **air** with a space velocity of 16,000 hr-1 over a bed of **catalyst** pills, at 600.degree., gave a conversion to NO2 of 91.
IT **1308-06-1**
(**catalyst**, for **oxidn.** of **ammonia**, prepn. of supported)
RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7664-41-7**, reactions
(**oxidn.** of, **catalysts** for)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IT **12037-29-5P**
(prepn. of oxide-supported)
RN 12037-29-5 HCA
CN Praseodymium oxide (Pr6O11) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
CC 67 (Catalysis and Reaction Kinetics)
ST **ammonia oxidn catalyst**; cobalt **catalyst ammonia oxidn**
IT **Catalysts** and **Catalysis**
(alkaline earth oxide-transition metal oxide-aluminum oxide, manuf. of)
IT **Oxidation catalysts**
(calcium aluminate-cobalt oxide, for **ammonia**)
IT Transition metal oxides
(**catalysts**, alkaline earth oxide-aluminum oxide supported)
IT 12042-68-1
(**catalyst** support, for transition metal oxide **catalysts**)
IT **1308-06-1**
(**catalyst**, for **oxidn.** of **ammonia**, prepn. of supported)
IT 1313-99-1, uses and miscellaneous
(**catalyst**, prepn. of oxide-supported)
IT 1304-28-5P, uses and miscellaneous 1305-78-8P, uses and miscellaneous
(**catalysts**, contg. transition metal oxide, prepn. of)
IT **7664-41-7**, reactions
(**oxidn.** of, **catalysts** for)
IT 1309-37-1P, uses and miscellaneous **12037-29-5P**
(prepn. of oxide-supported)

L24 ANSWER 17 OF 18 HCA COPYRIGHT 1999 ACS
76:90700 Metal oxide **catalysts** with aluminate support.
Stander, Cornelius M.; Hughes, David Owen (African Explosives and Chemical Industries Ltd.). Ger. Offen. DE 2061092 19720127, 24 pp. (German). CODEN: GWXXBX. PRIORITY: ZA 1969-8637 19691212.
AB Porous **catalyst** pellets contg. oxides of Co, Ni, Fe, or Pr on supports of Ca aluminate, Ba aluminate, or Ba titanate, useful for **NH3 oxidn.** and hydrocarbon conversion processes, were manufd. and had high mech. strength. Thus, a mixt. contg. Co(NO3)2.6H2O 145, Al(NO3)3.9H2O 95, and Ca(NO3)2.-4H2O 29.9 g was heated at 297.degree. pressed to 7.5-mm thick pellets and heated 1 hr at 727.degree. in a muffle furnace to give a Co oxide **catalyst** on CaAl2O4 support. Then 10% **NH3**-**air** was passed over this **catalyst** at 650.degree. and space velocity 16,000 hr-1 to give N oxides at 91% conversion.
IT **1308-06-1**
(**catalyst**, aluminate-supported, for **oxidn.** of **ammonia**)
RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **12037-29-5**
(**catalyst**, with calcium aluminate support)

RN 12037-29-5 HCA
CN Praseodymium oxide (Pr6O11) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7664-41-7**, reactions
(**oxidn.** of, **catalysts** for)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IC B01J
CC 67 (Catalysis and Reaction Kinetics)
Section cross-reference(s): 49
ST cobalt oxide aluminate **catalyst**; nickel oxide aluminate **catalyst**; iron oxide aluminate **catalyst**; praseodymium oxide aluminate **catalyst**; oxide metal aluminate **catalyst**; **ammonia oxidn catalyst**
IT **Oxidation catalysts**
(calcium aluminate-cobalt oxide, for **ammonia**)
IT Transition metal oxides
(**catalysts**, with alkali metal aluminate and titanate supports)
IT **Catalysts** and **Catalysis**
(metal oxide-aluminate, of high mechanical strength)
IT 12042-68-1
(**catalyst** support, for metal oxides)
IT 12004-04-5 12047-27-7, uses and miscellaneous
(**catalyst** support, for nickel oxide)
IT **1308-06-1**
(**catalyst**, aluminate-supported, for **oxidn.** of **ammonia**)
IT 11099-02-8
(**catalyst**, with barium titanate support)
IT 1332-37-2 **12037-29-5**
(**catalyst**, with calcium aluminate support)
IT **7664-41-7**, reactions
(**oxidn.** of, **catalysts** for)

L24 ANSWER 18 OF 18 HCA COPYRIGHT 1999 ACS
76:74377 Cobalt oxide **catalysts**. Hughes, David Owen (African Explosives and Chemical Industries Ltd.). Ger. Offen. DE 2131746 19711230, 20 pp. (German). CODEN: GWXXBX. PRIORITY: ZA 1970-4407 19700626.
AB **Catalysts**, useful in the **oxidn.** of **NH3** to NO, contg. active Co3O4 and promoted by 7-15 oxides of Sc, Y, La, Ce, Nd, Pr, or Tb, were prepd. by copptg. the corresponding basic carbonates, heating the dried ppts. at 300.degree. for conversion to oxides, extruding or pelletizing, and heating the pellets at

700.degree.. Thus, aq. solns. contg. Na2CO3 149, Co(NO3)2.-6H2O 326, and Sc2O3 10 parts at 75.degree. were mixed and pptd. as basic carbonates which were repeatedly slurried and filtered and then heated 16 hr at 300.degree., milled, sieved, and extruded to give 4 .times. 4 mm pellets which were heated 1 hr at 700.degree.. The **catalyst** gave 80% conversion of **NH3** to NO at 1000 m3/hr/m2 load.

IT **1308-06-1**
(**oxidn. catalysts**, contg. rare earth oxide promoters, for **ammonia**)
RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7664-41-7**, reactions
(**oxidn.** of, cobalt oxide **catalysts** contg. rare earth oxide promoters for)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IT **1313-97-9 1345-13-7 12031-20-8 12036-05-4 12036-41-8**
(promoters, for cobalt oxide **oxidn. catalysts** for **ammonia**)
RN 1313-97-9 HCA
CN Neodymium oxide (Nd2O3) (7CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1345-13-7 HCA
CN Cerium oxide (Ce2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 12031-20-8 HCA
CN Lanthanum oxide (LaO) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

La═O

RN 12036-05-4 HCA
CN Praseodymium oxide (PrO2) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O═Pr═O

RN 12036-41-8 HCA
CN Terbium oxide (Tb2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IC B01J; C01B
CC 49 (Industrial Inorganic Chemicals)
Section cross-reference(s): 67
ST cobalt oxide **catalyst**; rare earth oxide **catalyst** ; **ammonia oxidn catalyst**
IT **Oxidation catalysts**
(cobalt oxide, contg. rare earth oxide promoters, for **ammonia**)
IT Rare earth oxides
(promoters, for cobalt oxide **oxidn. catalysts** for **ammonia**)
IT **1308-06-1**
(**oxidn. catalysts**, contg. rare earth oxide promoters, for **ammonia**)
IT **7664-41-7**, reactions
(**oxidn.** of, cobalt oxide **catalysts** contg. rare earth oxide promoters for)
IT **1313-97-9** 1314-36-9 **1345-13-7 12031-20-8 12036-05-4 12036-41-8** 12060-08-1
(promoters, for cobalt oxide **oxidn. catalysts** for **ammonia**)

=> d l25 1-16 cbib abs hitstr hitind

L25 ANSWER 1 OF 16 HCA COPYRIGHT 1999 ACS
130:70692 Solid **catalysts** for wet **oxidation** of nitrogen-containing organic compounds. Dobrynkin, Nikolay M.; Batygina, Marina V.; Noskov, Aleksandr S. (Boreskov Institute of Catalysis, Novosibirsk, 630090, Russia). Catal. Today, 45(1-4), 257-260 (English) 1998. CODEN: CATTEA. ISSN: 0920-5861. Publisher: Elsevier Science B.V..
AB Several solid **catalysts** (Co_3O_4/.gamma.-Al_2O_3, Fe_2O_3/.gamma.-Al_2O_3, Mn_2O_3/.gamma.-Al_2O_3, Zn-Fe-Mn-Al-O, Pt/.gamma.-Al_2O_3, Ru/CeO_2, Ru/C) were prepd. and used to remove N-contg. org. contaminants while processing toxic and hazardous industrial wastewaters using wet **oxidn.** by **air** (WAO). The autoclave tests of **catalysts** were done to reveal the main advantages of **catalysts** in water presence at high pressures and temps. **Catalyst** activity was detd. with regard to O interaction with model mixts. (water-org. contaminant: acetonitrile, carbamide, DMF, or multi-component mixt. of aliph. alcs.). Activity tests were done in a static reactor under ideal mixing regime. Reagents and products were monitored using gas chromatograph Cvet-560, Millichrom-1 HPLC, and routine chem. anal. Optimum process conditions for the best **catalyst** (Ru/graphite-like C) are as follows: partial O pressure 1.0 MPa, temp. 473-513 K. At 0.5-5.0 MPa total pressure and 433-523 K **catalysts** show high water-resistance and high activity level (residual content of toxic compds. is <1%, and

no NOx and **NH3** are detected). There are no legal restrictions on **catalysts** operation, since they are harmless to environment.

IT **1306-38-3**, Cerium oxide (CeO2), uses **1308-06-1**, Tricobalt tetraoxide
(solid **catalysts** for wet **oxidn.** of nitrogen-contg. org. compds.)

RN 1306-38-3 HCA

CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)

RN 1308-06-1 HCA

CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CC 60-2 (Waste Treatment and Disposal)
Section cross-reference(s): 67

ST solid **catalyst** wet **oxidn** nitrogen org

IT Wastewater treatment
(**catalytic oxidn.**; solid **catalysts** for wet **oxidn.** of nitrogen-contg. org. compds.)

IT Organic compounds, processes
(nitrogenous; solid **catalysts** for wet **oxidn.** of nitrogen-contg. org. compds.)

IT **Oxidation catalysts**
(solid **catalysts** for wet **oxidn.** of nitrogen-contg. org. compds.)

IT Aliphatic alcohols
(solid **catalysts** for wet **oxidn.** of nitrogen-contg. org. compds.)

IT Wastewater **oxidation**
(wet **oxidn.**; solid **catalysts** for wet **oxidn.** of nitrogen-contg. org. compds.)

IT **1306-38-3**, Cerium oxide (CeO2), uses **1308-06-1**, Tricobalt tetraoxide 1309-37-1, Ferric oxide, uses 1314-13-2, Zinc oxide, uses 1317-34-6, Manganese oxide (Mn2O3) 1344-28-1, Alumina, uses 7440-06-4, Platinum, uses 7440-18-8, Ruthenium, uses 11129-60-5, Manganese oxide
(solid **catalysts** for wet **oxidn.** of nitrogen-contg. org. compds.)

IT 57-13-6, Carbamide, processes 68-12-2, DMF, processes 75-05-8, Acetonitrile, processes
(solid **catalysts** for wet **oxidn.** of nitrogen-contg. org. compds.)

L25 ANSWER 2 OF 16 HCA COPYRIGHT 1999 ACS

127:55254 **Catalytic** wastewater treatment for removing **ammoniac** nitrogen. Kawagoe, Hiroshi; Mori, Toshikatsu; Baba, Kenji; Murai, Yukio; Tanaka, Akio (Hitachi, Ltd., Japan;

Hitachi Plant Engineering and Construction Co., Ltd.). Jpn. Kokai Tokkyo Koho JP 09155364 A2 19970617 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-322797 19951212.

AB Wastewater is treated by contacting with **catalysts** contg. conductive supports, primary active components selected form .gtoreq.1 of Pt, Pd, Rh, Au, Ag, and Ru, secondary active components selected from oxides of Mn, Co, Fe, Ni, Ce, V, and/or Mo in the presence of .gtoreq.2 times (vs. theor. amt.) O. The process is applicable to wastewater from thermal power plants, sewage treatment, amine manufg. plants, food manufg. plants, and night soil treatment. The process removes high-concn. **ammoniac** N at low temp. and low pressure efficiently.

IT **7782-44-7**, Oxygen, uses
(**ammoniac** N removal from wastewater by **catalysts** contg. activated carbon, noble metals, and metal oxides with oxygen)

RN 7782-44-7 HCA

CN Oxygen (8CI, 9CI) (CA INDEX NAME)

IT **1306-38-3**, Ceria, uses **1307-96-6**, Cobalt monoxide, uses
(**catalyst**; **ammoniac** N removal from wastewater by activated carbon, noble metals, and metal oxides with oxygen)

RN 1306-38-3 HCA

CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)

RN 1307-96-6 HCA

CN Cobalt oxide (CoO) (8CI, 9CI) (CA INDEX NAME)

IC ICM C02F001-58
ICS C02F001-58; C02F001-02; C02F001-74

CC 60-2 (Waste Treatment and Disposal)
Section cross-reference(s): 17, 52

ST wastewater treatment **catalyst** noble metal; metal oxide **catalyst** wastewater treatment; **ammoniac** nitrogen removal wastewater **catalytic oxidn**; thermal power plant wastewater treatment; sewage wastewater treatment **catalyst**; amine manuf wastewater treatment **catalyst** ; food manuf wastewater treatment **catalyst**; night soil wastewater treatment **catalyst**

IT Wastewater denitrification
(**ammoniac** N removal from wastewater by **catalysts** contg. activated carbon, noble metals, and metal oxides with oxygen)
IT Transition metals, uses
(noble, **catalyst**; **ammoniac** N removal from wastewater by activated carbon, noble metals, and metal oxides with oxygen)
IT Power plants
(thermal, wastewater from; **ammoniac** N removal by activated carbon, noble metals, and metal oxides with oxygen)
IT Amines, preparation
(wastewater from manufacturer of; **ammoniac** N removal by activated carbon, noble metals, and metal oxides with oxygen)
IT Food processing
(wastewater from; **ammoniac** N removal by activated carbon, noble metals, and metal oxides with oxygen)
IT 7440-44-0, Carbon, uses
(activated; **ammoniac** N removal from wastewater by **catalysts** contg. activated carbon, noble metals, and metal oxides with oxygen)
IT **7782-44-7**, Oxygen, uses
(**ammoniac** N removal from wastewater by **catalysts** contg. activated carbon, noble metals, and metal oxides with oxygen)
IT 14798-03-9, Ammonium, processes
(**ammoniac** N removal from wastewater by **catalysts** contg. activated carbon, noble metals, and metal oxides with oxygen)
IT **1306-38-3**, Ceria, uses **1307-96-6**, Cobalt monoxide, uses 1309-37-1, Ferric oxide, uses 1313-13-9, Manganese dioxide, uses 1313-27-5, Molybdenum oxide (MoO3), uses 1313-99-1, Nickel monoxide, uses 1314-62-1, Vanadium pentoxide, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-22-4, Silver, uses 7440-57-5, Gold, uses
(**catalyst**; **ammoniac** N removal from wastewater by activated carbon, noble metals, and metal oxides with oxygen)

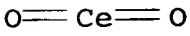
L25 ANSWER 3 OF 16 HCA COPYRIGHT 1999 ACS
124:269015 **Catalysts** and process for decomposition of **ammonia**. Sugishima, Noboru; Hagi, Mitsuharu; Kobayashi, Motonobu (Nippon Catalytic Chem Ind, Japan). Jpn. Kokai Tokkyo Koho JP 08024651 A2 19960130 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1994-171287 19940722.
AB The **catalysts** contain (A) mixed oxides selected from binary Ti-Si oxides, binary Ti-Zr oxides, and ternary Ti-Si-Zr oxides; (B) oxides of metals selected from V, W, and Mo, and (C) (compds.) of metals selected from Fe, Mn, Cu, Cr, Co, Ce, and Ni. **Ammonia** is decompd. with the **catalysts**. The method is effective for **NH3**-contg. **O**-rich **gases** at wide temp. range without generating NOx, and even

in the presence of S oxides, H sulfide, S-contg. org. compds., and/or N-contg. org. compds.

IT **1306-38-3**, Cerium dioxide, uses **1308-04-9**, Cobalt oxide (co2o3)
(**catalyst** component; decompn. **catalysts** for **ammonia**)

RN 1306-38-3 HCA

CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)



RN 1308-04-9 HCA

CN Cobalt oxide (Co2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7664-41-7**, **Ammonia**, processes
(decompn. **catalysts** for **ammonia**)

RN 7664-41-7 HCA

CN Ammonia (8CI, 9CI) (CA INDEX NAME)

IC ICM B01J023-85
ICS B01D053-58; B01J035-10

CC 59-4 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 67

ST **ammonia** decompn **catalyst** oxide; waste gas **ammonia** decompn **catalyst**

IT Decomposition **catalysts**
Waste gases
(decompn. **catalysts** for **ammonia**)

IT **1306-38-3**, Cerium dioxide, uses **1308-04-9**, Cobalt oxide (co2o3) 1309-37-1, Iron oxide (fe2o3), uses 1313-27-5, Molybdenum trioxide, uses 1313-99-1, Nickel monoxide, uses 1314-35-8, Tungsten trioxide, uses 1314-62-1, Vanadium oxide (v2o5), uses 1317-38-0, Copper monoxide, uses 11118-57-3, Chromium oxide 52337-09-4, Silicon titanium oxide
(**catalyst** component; decompn. **catalysts** for **ammonia**)

IT **7664-41-7**, **Ammonia**, processes
(decompn. **catalysts** for **ammonia**)

IT 7783-06-4, Hydrogen sulfide, processes 12624-32-7, Sulfur oxide
(decompn. **catalysts** for **ammonia** and)

IT 7704-34-9, Sulfur, processes 7727-37-9, Nitrogen, processes
(org. compds.; decompn. **catalysts** for **ammonia** and)

L25 ANSWER 4 OF 16 HCA COPYRIGHT 1999 ACS

123:295636 **Catalytic** wet **oxidation** of nitrate- or nitrite-containing wastewaters. Shishida, Kenichi; Maeda, Shinji; Ikeda, Mitsuaki; Ishii, Tooru; Mitsui, Kiichiro (Nippon Catalytic Chem Ind, Japan). Jpn. Kokai Tokkyo Koho JP 07185569 A2 19950725 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-336718 19931228.

AB The process comprises **catalytic** wet **oxidn.** of NO3- or NO2-contg. wastewater with solid **catalysts** contg. **catalyst** A components comprising compds. of .gtoreq.1 of Mn, Fe, and Co, **catalyst** B components comprising compds. of .gtoreq.1 of Ti, Si, and Zr, and **catalyst** C components comprising compds. of .gtoreq.1 of Ce, W, Cu, Ag, Au, Pt, Pd, Rh, Ru, and Ir in the presence of reducing agents at .gtoreq.(equiv. amts. for redn. of the NO3 in the wastewater into N) at 100-370.degree. under pressure such that the wastewater remains a liq. The process provides high efficiency in removal of total N including NO3-N, NO2-N, and **NH3**-N in wastewater.

IT **1307-96-6P**, Cobalt oxide (CoO), uses **12014-74-3P**, Cerium oxide (CeO)
(wet **oxidn.** of NO3- or NO2-contg. wastewater with solid **catalysts** of metal compds. in presence of reducing agents)

RN 1307-96-6 HCA

CN Cobalt oxide (CoO) (8CI, 9CI) (CA INDEX NAME)

RN 12014-74-3 HCA

CN Cerium oxide (CeO) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

IC ICM C02F001-74
ICS C02F001-74; B01J023-70

CC 60-2 (Waste Treatment and Disposal)
Section cross-reference(s): 67

ST nitrate wastewater **oxidn catalyst** metal; **ammonia** nitrate removal wastewater **catalyst**

IT Reducing agents
(wet **oxidn.** of NO3- or NO2-contg. wastewater with solid **catalysts** of metal compds. in presence of reducing agents)

IT Metals, uses
Oxides, uses
(wet **oxidn.** of NO3- or NO2-contg. wastewater with solid **catalysts** of metal compds. in presence of reducing agents)

IT Nitrites

Nitrates, processes
(wet **oxidn.** of NO3- or NO2-contg. wastewater with solid **catalysts** of metal compds. in presence of reducing agents)

IT Wastewater treatment
(redn., wet **oxidn.** of NO3- or NO2-contg. wastewater with solid **catalysts** of metal compds. in presence of reducing agents)

IT Wastewater treatment
(wet **oxidn.**, **catalytic**, wet **oxidn.** of NO3- or NO2-contg. wastewater with solid **catalysts** of metal compds. in presence of reducing agents)

IT 14798-03-9, Ammonium, processes
(reducing agent; wet **oxidn.** of NO3- or NO2-contg. wastewater with solid **catalysts** of metal compds. in presence of reducing agents)

IT 7439-88-5, Iridium, uses 7439-89-6, Iron, uses 7439-96-5, Manganese, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-45-1, Cerium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7440-67-7, Zirconium, uses
(wet **oxidn.** of NO3- or NO2-contg. wastewater with solid **catalysts** of metal compds. in presence of reducing agents)

IT **1307-96-6P**, Cobalt oxide (CoO), uses 1309-37-1P, Iron oxide (Fe2O3), uses 1313-13-9P, Manganese dioxide, uses 1314-23-4P, Zirconia, uses 1314-35-8P, Tungsten oxide, uses 1317-38-0P, Copper oxide (CuO), uses 1344-28-1P, Alumina, uses 7631-86-9P, Silica, uses **12014-74-3P**, Cerium oxide (CeO) 12023-27-7P, Iron titanium oxide (Fe2TiO5) 13463-67-7P, Titania, uses 20667-12-3P, Silver oxide 50811-64-8P, Iron titanium oxide (Fe2Ti3O9) 169554-66-9P, Manganese titanium oxide (Mn0.65Ti0.35O2) 169554-67-0P, Cobalt zirconium oxide (Co0.77Zr0.23O1.23) 169554-68-1P, Copper iron oxide silicate (Cu0.24Fe1.3O1.97(SiO4)0.11) 169554-69-2P 169554-70-5P, Cobalt silver tungsten oxide silicate (Co0.62Ag0.01W0.05O0.12(SiO4)0.32) 169554-71-6P, Iron palladium titanium oxide (Fe1.58Pd0.01Ti0.2O2.76) 169554-72-7P, Iron titanium oxide (Fe1.63Ti0.18O2.81) 169554-73-8P, Iron titanium oxide (Fe1.07Ti0.46O2.53) 169554-74-9P, Iron titanium oxide (Fe0.35Ti0.82O2.17)
(wet **oxidn.** of NO3- or NO2-contg. wastewater with solid **catalysts** of metal compds. in presence of reducing agents)

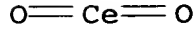
L25 ANSWER 5 OF 16 HCA COPYRIGHT 1999 ACS
121:163238 Wastewater treatment by **catalytic** ozonization. Shishida, Kenichi; Ikeda, Mitsuaki; Mitsui, Kiichiro; Sano, Kunio (Nippon Catalytic Chem Ind, Japan). Jpn. Kokai Tokkyo Koho JP 06114387 A2 19940426 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1992-270326 19921008.

AB The process comprises contacting wastewater contg. **oxidizable** materials with O3-contg. gases to **oxidize** a part of the materials in primary **catalyst** layers, wherein the gases are fed from an entrance between the primary **catalyst** layers and secondary **catalyst** layers, then feeding the treated wastewater into secondary **catalyst** layers to **oxidize** the residual materials and to decomp. unreacted sol. O3. The **oxidizable** materials may be COD and/or **NH3**.

IT **1306-38-3**, Cerium oxide (CeO2), uses **1307-96-6**, Cobalt oxide (CoO), uses
(**catalysts** contg., for ozonization of wastewater)

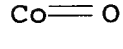
RN 1306-38-3 HCA

CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)



RN 1307-96-6 HCA

CN Cobalt oxide (CoO) (8CI, 9CI) (CA INDEX NAME)



IT **7664-41-7**, **Ammonia**, miscellaneous
(removal of, from wastewater, by **catalytic** ozonization)

RN 7664-41-7 HCA

CN Ammonia (8CI, 9CI) (CA INDEX NAME)

IC ICM C02F001-78

CC 60-2 (Waste Treatment and Disposal)
Section cross-reference(s): 67

ST ozonization wastewater **catalyst**

IT Wastewater treatment
(ozonization, **catalytic**, unreacted ozone removal in)

IT 1304-28-5, Barium oxide, uses 1305-78-8, Calcium oxide, uses **1306-38-3**, Cerium oxide (CeO2), uses **1307-96-6**, Cobalt oxide (CoO), uses 1309-37-1, Iron oxide (Fe2O3), uses 1309-48-4, Magnesium oxide, uses 1313-13-9, Manganese oxide (MnO2), uses 1313-99-1, Nickel oxide, uses 1314-11-0, Strontium oxide, uses 1314-13-2, Zinc oxide, uses 1314-23-4, Zirconia, uses 1314-35-8, Tungsten oxide, uses 1317-38-0, Copper oxide (CuO), uses 1344-28-1, Alumina, uses 7439-88-5, Iridium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-22-4, Silver, uses 7440-57-5, Gold, uses 7631-86-9, Silica, uses 12018-79-0, Copper

iron oxide 12627-93-9, Iron strontium oxide 13463-67-7, Titania, uses 37368-09-5, Titanium zirconium oxide 52337-09-4, Silicon titanium oxide 152008-29-2, Cerium titanium zirconium oxide 157466-71-2, Barium magnesium nickel oxide (Ba0.11Mg0.23Ni0.66O) 157466-72-3, Manganese strontium zinc oxide (Mn0.15Sr0.1Zn0.76O1.15) 157466-73-4, Calcium cobalt tungsten oxide (Ca0.41Co0.56W0.03O1.06)
(**catalysts** contg., for ozonization of wastewater)

IT **7664-41-7**, **Ammonia**, miscellaneous
(removal of, from wastewater, by **catalytic** ozonization)

IT 10028-15-6, Ozone, miscellaneous
(wastewater treatment with, **catalysts** for)

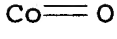
L25 ANSWER 6 OF 16 HCA COPYRIGHT 1999 ACS

118:153481 **Air** purification by ceramic **catalysts**.
Shoji, Masami; Shoji, Kishio (Seisui K. K., Japan). Jpn. Kokai Tokkyo Koho JP 04281821 A2 19921007 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-123280 19910306.

AB The process comprises filling shaped ceramic **catalyst** composed of a support contg. SiO2, Al2O3, and MgO and 0.3-30.0% of active component contg. .gtoreq.3 oxides (.gtoreq.0.1% each) of Mn, Fe, Ti, Ca, K, Co, Cu, Cr, Ni, Sn, Ba, Y, and Gd in a vertical reactor, placing the reactor in the **air** conditioning passage, passing mists of aq. alk. solns. contg. chlorite salts and alk. agents from top of the reactor to activate the solns., supplying polluted **air** from the bottom of the reactor to contact with the activated solns. for **oxidative** decompn. of the odorous components and disinfection, and circulating the purified **air** in the **air** conditioning passage.

IT **1307-96-6**, Cobalt oxide (CoO), uses **12064-62-9**, Gadolinium oxide
(**catalysts** contg., for deodorization and disinfection of **air** with chlorite solns.)

RN 1307-96-6 HCA
CN Cobalt oxide (CoO) (8CI, 9CI) (CA INDEX NAME)



RN 12064-62-9 HCA
CN Gadolinium oxide (Gd2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7664-41-7**, **Ammonia**, miscellaneous
(removal of, from **air**, by chlorite solns., ceramic **catalysts** in)

RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

IC ICM B01D053-36
ICS A61L009-00; B01D053-34; B01J023-86; B01J035-04
CC 59-6 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 57
ST **air** deodorization disinfection ceramic **catalyst**
IT Chlorites
Hypochlorites
(aq., activated, for deodorization and disinfection of **air**)
IT Ceramic materials and wares
(**catalysts**, in deodorization and disinfection of **air** with chlorite solns.)
IT **Catalysts** and **Catalysis**
(ceramic, in deodorization and disinfection of **air** with chlorite solns.)
IT Dust
(removal of, from **air**, by chlorite solns., ceramic **catalysts** for)
IT **Air** purification
(deodorization, disinfection and, by chlorite solns., ceramic **catalysts** for)
IT **Air** purification
(disinfection, deodorization and, by chlorite solns., ceramic **catalysts** for)
IT 7681-52-9, Sodium hypochlorite
(aq., activated, for deodorization and disinfection of **air**)
IT 1309-48-4, Magnesia, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
(**catalyst** supports contg., in deodorization and disinfection of **air** with chlorite solns.)
IT 1304-28-5, Barium oxide, uses 1305-78-8, Calcium oxide, uses **1307-96-6**, Cobalt oxide (CoO), uses 1308-38-9, Chromium oxide (Cr2O3), uses 1309-37-1, Iron oxide (Fe2O3), uses 1313-99-1, Nickel oxide, uses 1314-36-9, Yttrium oxide (Y2O3), uses 1317-38-0, Copper oxide (CuO), uses 1332-29-2, Tin oxide 1344-43-0, Manganese oxide (MnO), uses **12064-62-9**, Gadolinium oxide 12136-45-7, Potassium oxide, uses 13463-67-7, Titania, uses
(**catalysts** contg., for deodorization and disinfection of **air** with chlorite solns.)
IT 146541-72-2
(ceramic, in deodorization and disinfection of **air** with chlorite solns.)
IT 124-38-9, Carbon dioxide, miscellaneous
(removal of, from **air**, by chlorite solns., ceramic **catalysts** for)
IT 74-93-1, Methyl mercaptan, miscellaneous 7446-09-5, Sulfur dioxide, miscellaneous **7664-41-7**, **Ammonia**, miscellaneous 7783-06-4, Hydrogen sulfide, miscellaneous
(removal of, from **air**, by chlorite solns., ceramic

catalysts in)

L25 ANSWER 7 OF 16 HCA COPYRIGHT 1999 ACS
114:215425 Benzaldehyde-**ammonia** titration method for discrimination between surfaces of metal oxide **catalysts**.
Niwa, Miki; Suzuki, Katsuhiro; Kishida, Miho; Murakami, Yuichi (Sch. Eng., Nagoya Univ., Nagoya, 464-01, Japan). Appl. Catal., 67(2), 297-305 (English) 1991. CODEN: APCADI. ISSN: 0166-9834.

AB The benzaldehyde-**ammonia** titrn. method was applied to various metal oxides (26 different kinds plus 5 samples with lower **oxidn.** state or different crystal phases) in order to extend this method for the discrimination between surfaces of metal oxide **catalysts.** Based upon the adsorbed benzoate d. and the formation of carbon oxides, metal oxides were classified into 5 groups. The surfaces of metal oxides from the different groups can thus be discriminated. Basicity and combustion activity of O in metal oxides detd. the reaction profile. As examples, CuO or Fe2O3 loaded on Al2O3 were used for this measurement.

IT **7664-41-7**, **Ammonia**, uses and miscellaneous
(titrn. by, of adsorbed benzaldehyde, in method for discrimination between surfaces of metal oxide **catalysts**
)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IT **1306-38-3**, Cerium dioxide, uses and miscellaneous
1308-06-1, Cobalt oxide (co3o4) **1312-81-8**,
Lanthanum sesquioxide **12064-62-9**, Gadolinium sesquioxide
(titrn. of benzaldehyde adsorbed on, by **ammonia**, in method for surface classification)
RN 1306-38-3 HCA
CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)

O=Ce=O

RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1312-81-8 HCA
CN Lanthanum oxide (La2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 12064-62-9 HCA
CN Gadolinium oxide (Gd2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 66
ST benzaldehyde titrn **ammonia** surface metal oxide; basicity surface metal oxide benzaldehyde titrn
IT Transition metal oxides
(**catalysts**, method for discrimination between surfaces of, by titrn. of adsorbed benzaldehyde by **ammonia**)
IT **Catalysts** and **Catalysis**
(metal oxides, method for discrimination between surfaces of, by titrn. of adsorbed benzaldehyde by **ammonia**)
IT Basicity
(of metal oxide **catalysts**, detd. by titrn. of adsorbed benzaldehyde by **ammonia**)
IT **7664-41-7**, **Ammonia**, uses and miscellaneous
(titrn. by, of adsorbed benzaldehyde, in method for discrimination between surfaces of metal oxide **catalysts**)
IT 100-52-7, Benzaldehyde, reactions
(titrn. of adsorbed, by **ammonia**, in method for discrimination between surfaces of metal oxide **catalysts**)
IT 1304-56-9, Beryllium oxide 1304-76-3, Bismuth sesquioxide, uses and miscellaneous 1306-19-0, Cadmium monoxide, uses and miscellaneous **1306-38-3**, Cerium dioxide, uses and miscellaneous **1308-06-1**, Cobalt oxide (co3o4) 1308-38-9, Chromium sesquioxide, uses and miscellaneous 1309-37-1, Iron sesquioxide, uses and miscellaneous 1309-48-4, Magnesium oxide, uses and miscellaneous 1310-53-8, Germanium dioxide, uses and miscellaneous **1312-81-8**, Lanthanum sesquioxide 1313-13-9, Manganese dioxide, uses and miscellaneous 1313-27-5, Molybdena, uses and miscellaneous 1313-96-8, Niobia 1313-99-1, Nickel monoxide, uses and miscellaneous 1314-13-2, Zinc oxide, uses and miscellaneous 1314-23-4, Zirconium dioxide, uses and miscellaneous 1314-35-8, Tungsten trioxide, uses and miscellaneous 1314-41-6, Lead oxide (pb3o4) 1314-60-9, Antimony pentoxide 1314-62-1, Vanadia, uses and miscellaneous 1317-38-0, Copper monoxide, uses and miscellaneous 1317-61-9, Iron oxide (fe3o4), uses and miscellaneous 1344-28-1, Alumina, uses and miscellaneous 7631-86-9, Silica, uses and miscellaneous **12064-62-9**, Gadolinium sesquioxide 13463-67-7, Titanium oxide (TiO2), uses and miscellaneous 18282-10-5, Tin dioxide 133630-53-2, Tungsten oxide (WO2.24) 133630-54-3, Molybdenum oxide (MoO2.2) 133630-55-4, Vanadium oxide (V2O3.16)
(titrn. of benzaldehyde adsorbed on, by **ammonia**, in method for surface classification)

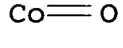
L25 ANSWER 8 OF 16 HCA COPYRIGHT 1999 ACS
105:124069 Photoassisted solid-**catalyzed** reduction of molecular nitrogen by water. Evidence for a photostationary state and for **catalytic** activity of many oxides. Lichtin,

Norman N.; Vijayakumar, Kalambella M. (Dep. Chem., Boston Univ., Boston, MA, 02215, USA). J. Indian Chem. Soc., 63(1), 29-34 (English) 1986. CODEN: JICSAH. ISSN: 0019-4522.

AB Yields of **NH3**, produced when N was placed in contact with bulk liq. H2O or H2O vapor over a no. of metal oxides under illumination from Xe lamps, were measured under a range of conditions. Active **catalysts** included CoO, Co3O4, Co-Mo-Al-oxide, Co-Mo-Ti-oxide, Cr2O3, .alpha.-Fe2O3, MoO3, Nd2O3, PbO, Pr6O11, TeO2, WO3, Zn-Fe-oxide, La-Ni-oxide and La-Ti-oxide as well as a ferric ion-contg. zeolite. System variables included period of reaction, short wavelength limit of light, temp., flow-rate of gaseous reactant, wt. of **catalyst** per unit vol. of liq. H2O and concn. of initially added **NH3**. At .ltoreq.30.degree. in the presence of illuminated suspensions of .alpha.-Fe2O3 or Cr2O3 in water, **NH3** is both formed and decayed in the reaction cell so that a photostationary state is ultimately reached. At .gtoreq.40.degree., **NH3** can be swept out of the cell rapidly so that decay is negligible. Under the latter conditions, over .alpha.-Fe2O3, Eact = 46 kJ mol-1. Eact = 19 KJ mol-1 over .alpha.-Fe2o3 in the absence of bulk H2O. In the presence of either H2O vapor or liq. water, both .alpha.-Fe2O3 and Cr2O3 maintained their **catalytic** activity for prolonged periods of time. The use of **air** did not alter the activity of Cr2O3 significantly. Several oxides with band-gap energies significantly smaller in magnitude than E.degree. = 1.23 V of the 6-electron redn. of N by H2O to aq. NH4OH, are active **catalysts**. At least one step of the reaction must in these cases involve absorption of >1 photon per electron transferred.

IT **1307-96-6**, uses and miscellaneous **1308-06-1** **1313-97-9** **12037-29-5**
(as **catalyst**, for photoassisted redn. of nitrogen by water)

RN 1307-96-6 HCA
CN Cobalt oxide (CoO) (8CI, 9CI) (CA INDEX NAME)



RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1313-97-9 HCA
CN Neodymium oxide (Nd2O3) (7CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 12037-29-5 HCA
CN Praseodymium oxide (Pr6O11) (6CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7664-41-7P**, preparation

(formation of, in photoassisted solid-**catalyzed** redn. of mol. nitrogen by water)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

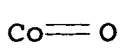
NH_3

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
ST photoassisted **catalyzed** nitrogen redn water; **ammonia** prepn nitrogen photoredn
IT Zeolites
(Fe, **catalysts**, for photoredn. of mol. nitrogen by water)
IT Reduction **catalysts**
(photochem., metal oxides as, for redn. of mol. nitrogen by water)
IT **1307-96-6**, uses and miscellaneous **1308-06-1**
1308-38-9, uses and miscellaneous 1309-37-1, uses and miscellaneous 1313-27-5, uses and miscellaneous **1313-97-9**
1314-35-8, uses and miscellaneous 1317-36-8, uses and miscellaneous 7446-07-3 11129-48-9 **12037-29-5**
37367-95-6 54427-11-1 58916-05-5 104245-04-7
(as **catalyst**, for photoassisted redn. of nitrogen by water)
IT **7664-41-7P**, preparation
(formation of, in photoassisted solid-**catalyzed** redn. of mol. nitrogen by water)
IT 7732-18-5, reactions
(photoassisted redn. of nitrogen by, metal oxide **catalysts** in)
IT 7727-37-9, reactions
(photoassisted redn. of, by water, metal oxide **catalysts** in)

L25 ANSWER 9 OF 16 HCA COPYRIGHT 1999 ACS
105:103447 A **catalyst** stable at a high temprature and a method for carrying out a reaction using the same. Yamashita, Hisao; Kato, Akira; Mizumoto, Mamoru; Matsuda, Shinpei (Hitachi, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 61038627 A2 19860224 Showa, 18 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-162329 19840731.
AB A **catalyst** stable at a high temp. consists of a **catalytically** active component and a support of a complex oxide of Al and a rare earth element selected from La, Nd, and Pr. The oxide has a sp. surface area .gtoreq.10 m2/g and converts into .beta.-alumina when heated at .gtoreq.1000.degree. for .ltoreq.2 h together with a rare earth .beta.-alumina. Addnl., the oxide may contain Cr, Sr, and Ce .ltoreq.1 wt.%. Optionally, the active component may consist of a Group VIII element, Mn, Cr, Zr, rare earth elements, Sn, Zn, Cu, Mg, Ba, Sr, V, W, Mo, Ti, Ga, In, Pb,

Bi, Sb, Ag, and/or Ca. A method for the prepn. of the **catalyst** is also described.

IT **1307-96-6**, uses and miscellaneous
(**catalyst** from iron oxide and lanthanum aluminum oxide and, for carbon monoxide redn. to hydrocarbons)
RN 1307-96-6 HCA
CN Cobalt oxide (CoO) (8CI, 9CI) (CA INDEX NAME)



IT **1312-81-8 1313-97-9 12036-32-7**
(**catalyst** supports from alumina and rare earth oxides contg.)
RN 1312-81-8 HCA
CN Lanthanum oxide (La2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1313-97-9 HCA
CN Neodymium oxide (Nd2O3) (7CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 12036-32-7 HCA
CN Praseodymium oxide (Pr2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Pr	2	7440-10-0

IT **7664-41-7P**, preparation
(manuf. of, iron oxide-copper oxide-potassium oxide-lanthanum aluminum oxide-**catalyzed**)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

IC ICM B01J023-10
ICS B01D053-36; B01J023-14; B01J023-26; B01J023-34; B01J023-56; B01J023-76; C01C001-04; C01F017-00; C04B035-10; C07C001-04; C07C001-20; C07C005-27; C07C029-15; C07C031-04; C07C047-22; C10G011-02; C10G045-06
ICA F23C011-00
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
ST aluminum rare earth oxide **catalyst** support; transition metal **catalyst** support; alk earth **catalyst**

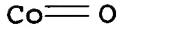
support
IT Rare earth oxides
(**catalyst** supports from alumina and)
IT Aluminates
(**catalyst** supports from rare earth oxides contg.)
IT Alkaline earth metals
Group VIII elements
Rare earth metals, uses and miscellaneous
Transition metals, uses and miscellaneous
(**catalysts** contg., rare earth oxide supports for)
IT Hydrocarbons, preparation
(manuf. of, from carbon monoxide redn., cobalt oxide-iron oxide-lanthanum aluminum oxide-**catalyzed**)
IT Isomerization **catalysts**
(nickel oxide-lanthanum aluminum oxide, for butane conversion)
IT Deodorants
(platinum-lanthanum aluminum oxide **catalysts** for)
IT **Oxidation catalysts**
(platinum-palladium on lanthanum aluminum oxide support, for automobile exhaust gas)
IT Exhaust gases
(platinum-rhodium-lanthanum aluminum oxide **oxidn. catalysts** for)
IT Methanation **catalysts**
(ruthenium nickel oxide-lanthanum aluminum oxide)
IT **Catalysts** and **Catalysis**
(supports from alumina and rare earth oxides for)
IT Hydrogenation **catalysts**
(tin oxide-lanthanum aluminum, for heavy oils)
IT 1309-37-1, uses and miscellaneous
(**catalyst** from cobalt oxide and lanthanum aluminum oxide and, for carbon monoxide redn. to hydrocarbons)
IT 7440-66-6, uses and miscellaneous
(**catalyst** from copper and lanthanum aluminum oxide and, for methanol conversion to formaldehyde)
IT 1317-61-9, uses and miscellaneous
(**catalyst** from copper oxide and potassium oxide and lanthanum aluminum oxide and, for **ammonia** manuf.)
IT 12136-45-7, uses and miscellaneous
(**catalyst** from iron oxide and copper oxide and lanthanum aluminum oxide and, for **ammonia** manuf.)
IT **1307-96-6**, uses and miscellaneous
(**catalyst** from iron oxide and lanthanum aluminum oxide and, for carbon monoxide redn. to hydrocarbons)
IT 1317-38-0, uses and miscellaneous
(**catalyst** from iron oxide and potassium oxide and lanthanum aluminum oxide and, for **ammonia** manuf.)
IT 39318-18-8
(**catalyst** from lanthanum aluminum oxide and titania and, for nitrogen oxide removal)
IT 1332-29-2
(**catalyst** from lanthanum aluminum oxide and, for

hydrogenation of heavy oils)
IT 1317-39-1, uses and miscellaneous
(**catalyst** from lanthanum aluminum oxide and, for propylene **oxidn.** to acrolein)
IT 7440-05-3, uses and miscellaneous
(**catalyst** from lanthanum aluminum oxide-supported, for methane **oxidn.**)
IT 7440-18-8, uses and miscellaneous
(**catalyst** from nickel oxide and lanthanum aluminum oxide and, for methane manuf. from carbon monoxide)
IT 1313-27-5, uses and miscellaneous
(**catalyst** from nickel oxide and lanthanum aluminum oxide and, for thiophene removal from hexane)
IT 7440-06-4, uses and miscellaneous
(**catalyst** from palladium and, lanthanum aluminum oxide support for, for automobile exhaust gas **oxidn.**)
IT 1313-99-1, uses and miscellaneous
(**catalyst** from ruthenium and lanthanum aluminum oxide and, for methane manuf. from carbon monoxide)
IT 13463-67-7, uses and miscellaneous
(**catalyst** from tungsten oxide and lanthanum aluminum oxide and, for nitrogen oxide removal)
IT 7440-50-8, uses and miscellaneous
(**catalyst** from zinc and lanthanum aluminum oxide and, for methanol conversion to formaldehyde)
IT 103018-22-0 103018-23-1
(**catalyst** supports contg., with high-temp. stability)
IT **1312-81-8 1313-97-9** 11118-57-3 11129-18-3 **12036-32-7**
(**catalyst** supports from alumina and rare earth oxides contg.)
IT 1314-11-0, uses and miscellaneous
(**catalyst** supports from alumina and rare earth oxides contg.)
IT 7439-92-1, uses and miscellaneous 7439-95-4, uses and miscellaneous 7439-96-5, uses and miscellaneous 7439-98-7, uses and miscellaneous 7440-22-4, uses and miscellaneous 7440-24-6, uses and miscellaneous 7440-31-5, uses and miscellaneous 7440-32-6, uses and miscellaneous 7440-33-7, uses and miscellaneous 7440-36-0, uses and miscellaneous 7440-39-3, uses and miscellaneous 7440-47-3, uses and miscellaneous 7440-55-3, uses and miscellaneous 7440-62-2, uses and miscellaneous 7440-67-7, uses and miscellaneous 7440-69-9, uses and miscellaneous 7440-70-2, uses and miscellaneous 7440-74-6, uses and miscellaneous
(**catalysts** contg., rare earth aluminum oxide supports for)
IT 106-97-8, reactions
(isomerization of, nickel oxide-lanthanum aluminum oxide-**catalyzed**)
IT 75-28-5P
(manuf. of, from butane isomerization, nickel oxide-lanthanum

aluminum oxide **catalyst** for)
IT 74-82-8P, preparation
(manuf. of, from carbon monoxide redn., ruthenium-nickel oxide-lanthanum aluminum oxide-**catalyzed**)
IT 50-00-0P, preparation
(manuf. of, from methanol **oxidn.**, copper-zinc-lanthanum aluminum oxide-**catalyzed**)
IT 107-02-8P, preparation
(manuf. of, from propylene **oxidn.**, copper oxide-lanthanum aluminum oxide-**catalyzed**)
IT **7664-41-7P**, preparation
(manuf. of, iron oxide-copper oxide-potassium oxide-lanthanum aluminum oxide-**catalyzed**)
IT 630-08-0, reactions
(methanation of, ruthenium-nickel oxide-lanthanum aluminum oxide-**catalyzed**)
IT 74-82-8, reactions
(**oxidn.** of, palladium-lanthanum aluminum oxide-**catalyzed**)
IT 115-07-1, reactions
(**oxidn.** of, to acrolein, copper oxide-lanthanum aluminum oxide-**catalyzed**)
IT 67-56-1, reactions
(**oxidn.** of, to formaldehyde, copper-zinc-lanthanum aluminum oxide-**catalyzed**)
IT 110-54-3, uses and miscellaneous
(removal of thiophene from, molybdenum oxide-nickel oxide-lanthanum aluminum oxide-**catalyzed**)
IT 78-93-3, uses and miscellaneous 108-88-3, uses and miscellaneous
(removal of, from **air**, platinum-lanthanum aluminum oxide **catalysts** for)
IT 110-02-1
(removal of, from hexane, molybdenum oxide-nickel oxide-lanthanum aluminum oxide-**catalyzed**)
IT 11104-93-1, uses and miscellaneous
(removal of, tungsten oxide-lanthanum aluminum oxide-titania **catalysts** for)

L25 ANSWER 10 OF 16 HCA COPYRIGHT 1999 ACS
105:103446 **Catalyst** support stable at a high temperature.
Yamashita, Hisao; Kato, Akira; Mizumoto, Mamoru; Matsuda, Shinpei (Hitachi, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 61035851 A2 19860220 Showa, 14 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-159980 19840730.
AB A **catalyst** support stable at a high temp. consists of a complex oxide of Al and a rare earth element of La, Nd, and/or Pr. The oxide has a sp. surface area .gtoreq.10 m2/g and converts into .beta.-alumina when heated at .gtoreq.1000.degree. for .ltoreq.2 h together with a rare-earth .beta.-alumina. Addnl., the oxide may contain Cr, Sr, and Ce .ltoreq.1 wt.%. A method for the prepn. of the support is also described.
IT **1307-96-6**, uses and miscellaneous

(**catalyst** from iron oxide and lanthanum aluminum oxide and, for carbon monoxide redn. to hydrocarbons)
RN 1307-96-6 HCA
CN Cobalt oxide (CoO) (8CI, 9CI) (CA INDEX NAME)



IT **12036-32-7**
(**catalyst** supports from alumina and rare earth oxides contg.)
RN 12036-32-7 HCA
CN Praseodymium oxide (Pr2O3) (6CI, 8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Pr	2	7440-10-0

IT **1312-81-8 1313-97-9**
(**catalysts** supports from alumina and rare earth oxides contg.)
RN 1312-81-8 HCA
CN Lanthanum oxide (La2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1313-97-9 HCA
CN Neodymium oxide (Nd2O3) (7CI, 8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **7664-41-7P**, preparation
(manuf. of, iron oxide-copper oxide-potassium oxide-lanthanum aluminum oxide-**catalyzed**)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

IC ICM B01J023-10
ICS B01J032-00; C01F017-00
ICA C04B035-10
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 45, 49, 59
ST aluminum rare earth oxide **catalyst** support
IT Aluminates
(**catalyst** supports from rare earth oxides contg.)
IT Rare earth oxides

(**catalysts** supports from alumina and)
IT Hydrocarbons, preparation
(manuf. of, from carbon monoxide redn., cobalt oxide-iron oxide-lanthanum aluminum oxide-**catalyzed**)
IT Isomerization **catalysts**
(nickel oxide-lanthanum aluminum oxide, for butane conversion)
IT Deodorants
(platinum-lanthanum aluminum oxide **catalysts** for)
IT **Oxidation catalysts**
(platinum-rhodium on lanthanum aluminum oxide support, for automobile exhaust gas)
IT Exhaust gases
(platinum-rhodium-lanthanum aluminum oxide **oxidn. catalysts** for)
IT Methanation **catalysts**
(ruthenium-nickel oxide-lanthanum aluminum oxide-lanthanum aluminum oxide)
IT **Catalysts** and **Catalysis**
(supports from alumina and rare earth oxides for)
IT Hydrogenation **catalysts**
(tin oxide-lanthanum aluminum oxide, for heavy oils)
IT 1309-37-1, uses and miscellaneous
(**catalyst** from cobalt oxide and lanthanum aluminum oxide and, for carbon monoxide redn. to hydrocarbons)
IT 1317-61-9, uses and miscellaneous
(**catalyst** from copper oxide and potassium oxide and lanthanum aluminum oxide and, for **ammonia** manuf.)
IT 12136-45-7, uses and miscellaneous
(**catalyst** from iron oxide and copper oxide and lanthanum aluminum oxide and, for **ammonia** manuf.)
IT **1307-96-6**, uses and miscellaneous
(**catalyst** from iron oxide and lanthanum aluminum oxide and, for carbon monoxide redn. to hydrocarbons)
IT 1317-38-0, uses and miscellaneous
(**catalyst** from iron oxide and potassium oxide and lanthanum aluminum oxide and, for **ammonia** manuf.)
IT 1313-27-5, uses and miscellaneous
(**catalyst** from nickel oxide and lanthanum aluminum oxide and, for thiophene removal from hexane)
IT 1313-99-1, uses and miscellaneous
(**catalyst** from ruthenium and lanthanum aluminum oxide and, for methane manuf. from carbon monoxide)
IT 103018-22-0 103018-23-1
(**catalyst** supports contg., with high-temp. stability)
IT **12036-32-7**
(**catalyst** supports from alumina and rare earth oxides contg.)
IT 7440-66-6, uses and miscellaneous
(**catalysts** from copper and lanthanum aluminum oxide and, for methanol conversion to formaldehyde)
IT 39318-18-8
(**catalysts** from lanthanum aluminum oxide and titania

and, for nitrogen oxide removal)
IT 1332-29-2
(**catalysts** from lanthanum aluminum oxide and, for hydrogenation of heavy oils)
IT 1317-39-1, uses and miscellaneous
(**catalysts** from lanthanum aluminum oxide and, for propylene **oxidn.** to acrolein)
IT 7440-05-3, uses and miscellaneous
(**catalysts** from lanthanum aluminum oxide-supported, for methane **oxidn.**)
IT 7440-18-8, uses and miscellaneous
(**catalysts** from nickel oxide and lanthanum aluminum oxide and, for methane manuf. from carbon monoxide)
IT 7440-16-6, uses and miscellaneous
(**catalysts** from platinum and, lanthanum aluminum oxide support for, for automobile exhaust gas **oxidn.**)
IT 7440-06-4, uses and miscellaneous
(**catalysts** from rhodium and, lanthanum aluminum oxide support for, for automobile exhaust gas **oxidn.**)
IT 13463-67-7, uses and miscellaneous
(**catalysts** from tungsten oxide and lanthanum aluminum oxide and, for nitrogen oxide removal)
IT 7440-50-8, uses and miscellaneous
(**catalysts** from zinc and lanthanum aluminum oxide and, for methanol conversion to formaldehyde)
IT **1312-81-8 1313-97-9** 11118-57-3 11129-18-3
(**catalysts** supports from alumina and rare earth oxides contg.)
IT 1314-11-0, uses and miscellaneous
(**catalysts** supports from alumina and rare earth oxides contg.)
IT 106-97-8, reactions
(isomerization of, nickel oxide-lanthanum aluminum oxide-**catalyzed**)
IT 75-28-5P
(manuf. of, from butane isomerization, nickel oxide-lanthanum aluminum oxide **catalyst** for)
IT 74-82-8P, preparation
(manuf. of, from carbon monoxide redn., ruthenium-nickel oxide-lanthanum aluminum oxide-**catalyzed**)
IT 50-00-0P, preparation
(manuf. of, from methanol **oxidn.**, copper-zinc-lanthanum aluminum oxide-**catalyzed**)
IT 107-02-8P, preparation
(manuf. of, from propylene **oxidn.**, copper oxide-lanthanum aluminum oxide-**catalyzed**)
IT **7664-41-7P**, preparation
(manuf. of, iron oxide-copper oxide-potassium oxide-lanthanum aluminum oxide-**catalyzed**)
IT 630-08-0, reactions
(methanation of, ruthenium-nickel oxide-lanthanum aluminum oxide-**catalyzed**)

IT 74-82-8, reactions
(**oxidn.** of, palladium-lanthanum aluminum oxide-**catalyzed**)
IT 115-07-1, reactions
(**oxidn.** of, to acrolein, copper oxide-lanthanum aluminum oxide, **catalyzed**)
IT 67-56-1, reactions
(**oxidn.** of, to formaldehyde, copper-zinc-lanthanum aluminum oxide-**catalyzed**)
IT 110-54-3, uses and miscellaneous
(removal of thiophene from, molybdenum oxide-nickel oxide-lanthanum aluminum oxide-**catalyzed**)
IT 78-93-3, uses and miscellaneous 108-88-3, uses and miscellaneous
(removal of, from **air**, platinum-lanthanum aluminum oxide **catalysts** for)
IT 110-02-1
(removal of, from hexane, molybdenum oxide-nickel oxide-lanthanum aluminum oxide-**catalyzed**)
IT 11104-93-1, uses and miscellaneous
(removal of, tungsten oxide-lanthanum aluminum oxide-titania **catalyst** for)

L25 ANSWER 11 OF 16 HCA COPYRIGHT 1999 ACS
101:44119 Zeolite containing occluded multicomponent metal oxides. Miale, Joseph Nicolas; Perkins, Patrick Danford; Chang, Clarence Dayton (Mobil Oil Corp. , USA). Eur. Pat. Appl. EP 107385 A1 19840502, 20 pp. DESIGNATED STATES: R: BE, DE, FR, GB, IT, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1983-305824 19830928. PRIORITY: US 1982-425361 19820928.
AB Highly active **catalysts** for hydrocarbon prepns. which consist of zeolites contg. inclusions of metal oxides are prepd. by combining a zeolite, a metal oxide precursor, and a N-contg. solvent to impregnate the zeolite, drying to remove the solvent, and calcining. Thus, zeolite ZSM-5 was calcined in **air** and He and mixed with a Zn(NO3)2 and Al(NO3)3 soln., liq. **NH3** was added with stirring, the **NH3** was evapd., and the **catalyst** was calcined at 130.degree..
IT **1306-38-3**, uses and miscellaneous
(**catalyst**, in zeolites for hydrocarbon conversions)
RN 1306-38-3 HCA
CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)

IT **1307-96-6**, uses and miscellaneous
(**catalysts**, in zeolite, for hydrocarbon prepn.)
RN 1307-96-6 HCA
CN Cobalt oxide (CoO) (8CI, 9CI) (CA INDEX NAME)

Co═O

IT **7664-41-7**, uses and miscellaneous
(solvent, in zeolite **catalyst** prepn.)
RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

IC C01B033-28; B01J037-02; B01J037-30
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 23, 24, 25
ST metal oxide zeolite **catalyst**
IT Zeolites, uses and miscellaneous
(**catalysts**, contg. metal oxide inclusions, prepn. of)
IT Transition metal oxides
(**catalysts**, zeolites contg.)
IT Amines, compounds
(heteropolysalts in zeolite **catalyst** prepn.)
IT Calcination
Drying
(of zeolites in **catalyst** prepn.)
IT Hydrocarbons, preparation
(prepn. of, zeolite **catalyst** for)
IT Cracking **catalysts**
(zeolites with metal oxide inclusions, prepn. of)
IT **Catalysts** and **Catalysis**
(zeolites, with metal oxide inclusions, prepn. of)
IT Group VIB element chalcogenides
(oxides, **catalysts**, from zeolites contg.)
IT Group VB element chalcogenides
(oxides, **catalysts**, zeolites contg.)
IT **1306-38-3**, uses and miscellaneous 1314-13-2, uses and miscellaneous 11098-99-0 11099-11-9 11118-57-3 12024-21-4
(**catalyst**, in zeolites for hydrocarbon conversions)
IT **1307-96-6**, uses and miscellaneous
(**catalysts**, in zeolite, for hydrocarbon prepn.)
IT 110-54-3, reactions
(cracking of, by zeolite **catalyst** contg. oxide inclusions)
IT 74-98-6, reactions
(hydrocarbon conversion reactions of, zeolite **catalyst** for)
IT 7803-55-6 10108-73-3 10141-05-6 13473-90-0 13548-38-4
(in **catalyst** prepn.)
IT 1336-21-6 7727-37-9D, compds. 13450-90-3
(in zeolite **catalyst** prepn.)
IT **7664-41-7**, uses and miscellaneous

(solvent, in zeolite **catalyst** prepn.)

L25 ANSWER 12 OF 16 HCA COPYRIGHT 1999 ACS
98:217589 Effect of promoters on the activity of tungsten trioxide **catalyst** for the disproportionation of trans-stilbene and ethylene to styrene. Ogonowski, Jan; Gajewski, Franciszek (Inst. Chem. Technol. Org., Politech. Krakowska, Krakow, Pol.). Zesz. Nauk. Uniw. Jagiellon., Pr. Chem., 27, 101-8 (Polish) 1982. CODEN: ZUJCAQ. ISSN: 0373-0166.

AB The effect of various promoters was detd. on the disproportionation of a mixt. of stilbene [588-59-0] and ethylene [74-85-1] to styrene (I) [100-42-5] in the presence of WO3 **catalysts**. The **catalysts** were prepd. by mixing (NH4)2W5O17 soln. with silica gel, drying the mixt., heating it in dry **air** at 600.degree. for 2 h, treating with a soln. of the appropriate promoter salt, drying, and heating in dry **air** at 600.degree. for 1 h. The presence of PdO in the **catalyst** increased the yield of I. CuO, Ag2O, and UO2 increased the selectivity of the reaction without significantly affecting the yield of I. NiO, TlO2, MnO, and La5O3 increased the selectivity but decreased the yield of I. Cr2O3 decreased the selectivity without significantly affecting the yield of I. CoO, V2O5, and P2O5 decreased both the selectivity and the yield of I. The presence of **NH3** in the reaction mixt. produced a large increase in selectivity and the yield of I.

IT **1307-96-6**, uses and miscellaneous **1312-81-8**
(**catalysts**, contg. tungsten oxide, for disproportionation of stilbene and ethylene to styrene, activity of)

RN 1307-96-6 HCA
CN Cobalt oxide (CoO) (8CI, 9CI) (CA INDEX NAME)

Co=O

RN 1312-81-8 HCA
CN Lanthanum oxide (La2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT **7664-41-7**, uses and miscellaneous
(disproportionation of stilbene and ethylene to styrene in presence of, on tungsten **catalysts**)

RN 7664-41-7 HCA
CN Ammonia (8CI, 9CI) (CA INDEX NAME)

NH_3

CC 45-4 (Industrial Organic Chemicals, Leather, Fats, and Waxes)
Section cross-reference(s): 25, 67

ST stilbene ethylene disproportionation styrene; tungsten disproportionation **catalyst** promoter activity; **catalyst** disproportionation stilbene ethylene

IT Disproportionation **catalysts**
(tungsten, for stilbene and ethylene to styrene, activity of, promoter effect on)

IT **1307-96-6**, uses and miscellaneous 1308-38-9, uses and miscellaneous **1312-81-8** 1313-99-1, uses and miscellaneous 1314-08-5 1314-12-1 1314-56-3, uses and miscellaneous 1314-62-1, uses and miscellaneous 1317-38-0, uses and miscellaneous 1344-43-0, uses and miscellaneous 1344-57-6, uses and miscellaneous 20667-12-3
(**catalysts**, contg. tungsten oxide, for disproportionation of stilbene and ethylene to styrene, activity of)

IT 1314-35-8, uses and miscellaneous
(**catalysts**, for disproportionation of stilbene and ethylene to styrene, activity of, promoter effect on)

IT 588-59-0
(disproportionation of ethylene and, to styrene, tungsten **catalysts** for, activity of, promoter effect on)

IT **7664-41-7**, uses and miscellaneous
(disproportionation of stilbene and ethylene to styrene in presence of, on tungsten **catalysts**)

IT 74-85-1, reactions
(disproportionation of stilbene and, to styrene, tungsten **catalysts** for, activity of, promoters effect on)

IT 100-42-5P, preparation
(formation of, by disproportionation of stilbene and ethylene, tungsten **catalysts** for, activity of, promoter effect on)

L25 ANSWER 13 OF 16 HCA COPYRIGHT 1999 ACS

96:186452 Ceria-promoted three-way **catalysts** for auto exhaust emission control. Kim, Gwan (Davison Chem. Div., W. R. Grace and Co., Columbia, MD, 21044, USA). Ind. Eng. Chem. Prod. Res. Dev., 21(2), 267-74 (English) 1982. CODEN: IEPRA6. ISSN: 0019-7890.

AB In an attempt to improve the three-way **catalyst** (TWC) performance for CO removal under **O2**-deficient conditions, a lab. study was conducted to select a non-noble metal oxide promoter for a typical of Pt-Pd-Rh TWC supported on alumina. CeO2 was the best promoter largely because it enhances the water-gas shift reaction (CO + H2O = CO2 + H2), and possibly due, in part, to the addnl. oxygen storage it provides to the TWC. The compatibility at high temps. with alumina as well as Pd is also a desirable property of ceria.

IT **7664-41-7**, uses and miscellaneous
(exhaust gas contg., treatment of, cerium oxide-promoted three-way **catalyst** and)

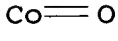
RN 7664-41-7 HCA

CN Ammonia (8CI, 9CI) (CA INDEX NAME)

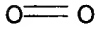
NH_3

IT **1306-38-3**, uses and miscellaneous
(promoter, for three-way **catalysts** for carbon monoxide removal from exhaust gases)
RN 1306-38-3 HCA
CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)

IT **1307-96-6**, uses and miscellaneous
(promoter, for three-way exhaust **catalysts**, carbon monoxide removal in relation to)
RN 1307-96-6 HCA
CN Cobalt oxide (CoO) (8CI, 9CI) (CA INDEX NAME)



IT **7782-44-7**, uses and miscellaneous
(storage of, by cerium oxide-promoted three-way exhaust **catalysts**, carbon monoxide removal in relation to)
RN 7782-44-7 HCA
CN Oxygen (8CI, 9CI) (CA INDEX NAME)



CC 59-3 (Air Pollution and Industrial Hygiene)
Section cross-reference(s): 56, 67
ST ceria promoter three way **catalyst**; exhaust three way **catalyst** ceria; carbon monoxide removal exhaust **catalyst**; platinum exhaust **catalyst** ceria promoter; palladium exhaust **catalyst** ceria promoter; rhodium exhaust **catalyst** ceria promoter
IT **Catalysts** and **Catalysis**
(cerium-promoted palladium-platinum-rhodium, for exhaust gas treatment, three-way)
IT Reduction **catalysts**
(palladium-platinum-rhodium, cerium oxide promoted, for nitrogen oxygen removal from exhaust gases)
IT **Oxidation catalysts**
(palladium-platinum-rhodium, cerium oxide-promoted, for carbon monoxide and hydrocarbon removal from exhaust gases)
IT Hydrocarbons, uses and miscellaneous
(removal of, from exhaust gas **catalysts**, cerium

oxide-promoted three-way **catalysts** and)
IT 7440-05-3, uses and miscellaneous 7440-06-4, uses and miscellaneous 7440-16-6, uses and miscellaneous
(**catalysts** contg., for carbon monoxide removal from exhaust gases, cerium oxide-promoted three-way)
IT 1333-74-0, uses and miscellaneous **7664-41-7**, uses and miscellaneous
(exhaust gas contg., treatment of, cerium oxide-promoted three-way **catalyst** and)
IT **1306-38-3**, uses and miscellaneous 1314-35-8, uses and miscellaneous
(promoter, for three-way **catalysts** for carbon monoxide removal from exhaust gases)
IT 1304-28-5, uses and miscellaneous **1307-96-6**, uses and miscellaneous 1308-38-9, uses and miscellaneous 1309-48-4, uses and miscellaneous 1314-13-2, uses and miscellaneous
(promoter, for three-way exhaust **catalysts**, carbon monoxide removal in relation to)
IT 630-08-0, uses and miscellaneous 10102-43-9, uses and miscellaneous
(removal of, from exhaust gas **catalysts**, cerium oxide-promoted three-way **catalysts** and)
IT **7782-44-7**, uses and miscellaneous
(storage of, by cerium oxide-promoted three-way exhaust **catalysts**, carbon monoxide removal in relation to)

L25 ANSWER 14 OF 16 HCA COPYRIGHT 1999 ACS
95:157484 **Oxidation** and ammoxidation **catalysts** and their uses. Ebner, Jerry Rudolph (Monsanto Co. , USA). Eur. Pat. Appl. EP 32618 19810729, 17 pp. (English). CODEN: EPXXDW. PRIORITY: US 1979-104498 19791217.
AB **Catalysts** for **oxidn.** and ammoxidn. of hydrocarbons have the empirical formula BiMOaMbSbcOx where a is 0.5-2, b is 0.05-1, c is 0.1-1.5 and x is selected to satisfy the valence requirements of the other elements present. In such **catalysts**, M is a metal element selected from Mn, Mg, Ag, Cr, Pb, Fe, Sn, Zn, Ce, Co, Ni, In, Ti, Zr, Tl and U. These **catalysts** were prepd. by forming a mixt. of a metal antimonate bismuth molybdate and, optionally, a support material and calcining to form the **catalyst**. Such **catalysts** are specifically useful for prodn. of acrylonitrile from propylene, **NH3**, and an **O2**-contg. gas.
IT **1306-38-3**, uses and miscellaneous **1308-04-9**
(**catalysts**, with bismuth molybdate and antimony oxide for ammoxidn. and **oxidn.** of hydrocarbons)
RN 1306-38-3 HCA
CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)

O═Ce═O

RN 1308-04-9 HCA
CN Cobalt oxide (Co2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IC B01J023-31; B01J023-88; B01J023-36; B01J023-54
CC 67-1 (Catalysis and Reaction Kinetics)
Section cross-reference(s): 23
ST **oxidn catalyst** bismuth antimonate molybdate; ammoxidn **catalyst** bismuth antimonate molybdate; propene ammoxidn **catalyst** acrylonitrile prepn
IT Hydrocarbons, reactions
(ammoxidn. and **oxidn.** of, bismuth antimonate molybdate **catalysts** for)
IT Ammoxidation **catalysts**
Oxidation catalysts
(bismuth antimonate molybdate, for hydrocarbons)
IT 115-07-1, reactions
(ammoxidn. of, bismuth antimonate molybdate **catalysts** for)
IT 13595-85-2 16229-40-6
(**catalysts**, for ammoxidn. and **oxidn.** of hydrocarbons)
IT 1309-64-4, uses and miscellaneous
(**catalysts**, from bismuth molybdate, metal oxides, and, for ammoxidn. and **oxidn.** of hydrocarbons)
IT **1306-38-3**, uses and miscellaneous **1308-04-9**
1309-48-4, uses and miscellaneous 1309-60-0 1312-43-2
1313-13-9, uses and miscellaneous 1313-99-1, uses and miscellaneous 1314-13-2, uses and miscellaneous 1332-37-2, uses and miscellaneous 1333-82-0 20667-12-3 21651-19-4
(**catalysts**, with bismuth molybdate and antimony oxide for ammoxidn. and **oxidn.** of hydrocarbons)
IT 107-13-1P, uses and miscellaneous
(prepn. of, by ammoxidn. of propene using bismuth antimonate molybdate **catalysts**)

L25 ANSWER 15 OF 16 HCA COPYRIGHT 1999 ACS
87:5094 Effect of gas modification and alloying additives on the properties of oxide **catalysts** for liquid-phase **oxidation** of cumene. Kolotusha, B. I.; Yampol'skaya, F. A.; Markiv, E. Ya.; Gorokhovatskii, Ya. B. (Inst. Fiz. Khim. im. Pisarzhevskogo, Kiev, USSR). Katal. Katal., 14, 45-8 (Russian) 1976. CODEN: KAKAAQ.
AB The effects of Ar, O, CO2, CO, **NH3**, and H on several metal oxide **catalysts** were smaller than the effects of other metal oxide additives. The rate of cumene **oxidn.** over Cr2O3, Fe2O3, Co2O4, NiO, and CuO was detd. by the rate of **catalytic** decompn. of the hydroperoxide. The lowest activation energy (5.1 kcal/mol) was obtained with a Co3O4-Al2O3 **catalyst.**
IT **12064-62-9**
(**catalysts** contg., for **oxidn.** of cumene)

RN 12064-62-9 HCA
CN Gadolinium oxide (Gd2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **1308-06-1**
(**catalysts**, contg. metal oxide additives, for **oxidn.** of cumene)
RN 1308-06-1 HCA
CN Cobalt oxide (Co3O4) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
CC 22-5 (Physical Organic Chemistry)
ST cumene **oxidn** metal oxide
IT **Oxidation catalysts**
(metal oxides, for cumene)
IT Kinetics of **oxidation**
(of cumene with metal oxide **catalysts**)
IT 1304-76-3, uses and miscellaneous 1314-20-1, uses and miscellaneous 12057-24-8, uses and miscellaneous **12064-62-9**
(**catalysts** contg., for **oxidn.** of cumene)
IT **1308-06-1** 1308-38-9, uses and miscellaneous 1309-37-1, uses and miscellaneous 1313-99-1, uses and miscellaneous 1314-13-2, uses and miscellaneous 1317-38-0, uses and miscellaneous
(**catalysts**, contg. metal oxide additives, for **oxidn.** of cumene)
IT 1344-28-1, uses and miscellaneous 16887-00-6, uses and miscellaneous
(**catalysts**, for **oxidn.** of cumene)
IT 98-82-8
(**oxidn.** of, **catalysts** for)

L25 ANSWER 16 OF 16 HCA COPYRIGHT 1999 ACS
74:57723 Metal oxide **catalysts**. Gelbein, Abraham P. (Lummus Co.). Ger. Offen. DE 2008648 19700917, 17 pp. (German). CODEN: GWXXBX. PRIORITY: US 19690227.
AB Transition metal oxide **catalysts** for dehydrogenations obtained by impregnation or suspension often do not reach the wanted activity, selectivity, and abrasion resistance values. Improved **catalysts** contain 30-60 wt. % metal oxides(s) within the pores of a continuous support. Oxides of the metals with at. nos. 21-33, 39-51, 57-71, 72-83, 90, and 92 are suitable. Supports are aluminas, silicas, silca-alumina, kieselguhr, zeolites, pumice, etc. of a surface >50 m2/g, a porosity of >0.4 cm3/g, and a particle distribution of 30-200 mesh. The **catalyst** is obtained by mechanically mixing both powd. oxides(s) and support, and heating in **air** to temps. above the oxide m.p. Thus, 180 g powd. V2O5 is mixed 15 min with 270 g microcryst. alumina of 97% Al2O3, a pore vol. of 0.5 cm3/g, a surface of 200 m2/g, and an av. particle diam. of 50 .mu.. The mixt. is heated 3 hr in an open furnace to 695.degree., melting, and absorbing the oxide into the support. The

catalyst is used for fluid bed **catalytic** syntheses of e.g. aromatic nitriles from alkyl subst. aromatic compds., **NH3**, H2O, and O at 350-400.degree.. As an example, the synthesis of terephthalonitrile is described.

IT **1306-38-3P 1308-04-9P**
(**catalysts**, manuf. of)

RN 1306-38-3 HCA
CN Cerium oxide (CeO2) (8CI, 9CI) (CA INDEX NAME)

O═Ce═O

RN 1308-04-9 HCA
CN Cobalt oxide (Co2O3) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IC C01G; B01J
CC 67 (Catalysis and Reaction Kinetics)
ST metal oxide **catalysts**; oxide metal **catalysts**; transition metal oxide **catalysts**; dehydrogenation transition metal oxide **catalysts**

IT Rare earth oxides
Transition metal oxides
(**catalysts**, manuf. of)

IT **Catalysts**
(metal oxide-aluminum oxide-silica, manuf. of)

IT Oxide, uses and miscellaneous
(**catalysts**, manuf. of)

IT 1313-27-5, uses and miscellaneous 1314-62-1, uses and miscellaneous
(**catalysts**, for terephthalonitrile manuf.)

IT **1306-38-3P 1308-04-9P** 1308-38-9P, uses and miscellaneous 1328-66-1P 1333-82-0P
(**catalysts**, manuf. of)

IT 623-26-7P
(manuf. of, **catalysts** for)